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# THE WORKES of that famous Chirurgion Ambrose Parey

*Translated out of Latine and compared with the French, by* Tho: Johnson.

*Whereunto are added three Tractates out of* Adrianus Spigelius *of the* Veines, Arteries, & Nerves, *with large* Figures.

*Also a Table of the Bookes and Chapters.*

London.
*Printed by* Richard Cotes, *and* Willi: Du-gard, *and are to be sold by* John Clarke, *entring into Mercers Chappell.* 1649.

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TO

# THE RIGHT HONOVRABLE

## EDVVARD LORD HERBERT OF *Cherbury* and *Caſtle Iſland*, and one of his Majeſties moſt Honorable Counſell of War.

*My Lord,*

IT is not the far-fetcht pedegree of noble Anceſtors, nor thoſe Honours your Lordſhip deſervedly poſſeſſes, that make mee crave your Patronage to this my Labour; but it is that Heroick mind, enriched with the choice endowments of Nature and Art, and that earneſt affection wherewith your Honour entertains all Sciences, Arts, and Artiſts, with that exquiſite Iudgment which ſees into the inner man, which embolden and incite me to ſue for your Honors aſſiſtance, in protecting the fame of him, who by your many favours is made yours. I know the ſeeming and ſelf-pleaſing Wiſdom of our times, conſiſts much in cavilling and unjuſtly carping at all things that ſee light, and that there are many who earneſtly hunt after the publike fame of Learning and Judgment, by this eaſily trod, and deſpicable path, which notwithſtanding they tread with as much confidence as folly; for that oft-times which they vainly and unjuſtly brand with opprobrie, outlives their *Fate*, and flouriſhes when it is forgot that ever any ſuch as they had being.

I know your Lordſhips diſpoſition to be far diſſenting from theſe men, and that you rather endeavour to build up the fame of your Learning and Judgement upon a ſtrong laid foundation of your own, than *Heroſtratus* like, by pulling down any howſoever fair built fabrick of another. I heartily wiſh that your Honour

could propagate this good, and that all Detractors might be turned into Actors, and then I know it would much mitigate their rigour in cenſuring others, when as they themſelves were alſo expoſed unto the ſame Hazzard.

I think it impertinent to acquaint your Honour with the Nature of the Work, my Pains in tranſlating, or the Benefit that may enſue thereon, for that I know your Honour ignorant of nothing in this kind; neither doubt I of your favourable acceptance of the good will of him, that thinks himſelf much honoured by being

Yours,

THOMAS JOHNSON.

TO

# To the Reader.

I Have here for the publike good taken pains to ſubject my ſelf to common cenſure, the which I doubt not but to find as various as the faces of the Cenſurers; but I expect no thanks, nor hunt after other praiſe, than that I have laboured for my Countries good, if that deſerve any. I fear not Calumniation (though ſure to hear of it) and therefore I will not Apologize, but inform thee of ſome things concerning the Author his work, and the reaſon that induced me to the tranſlation thereof, with ſome few things beſides. For the Author, who was principall Surgeon to two or three Kings of *France*, he was a man well verſed in the writings of the Antient and modern Phyſitians, and Surgeons, as you may evidently find by ſundry places alledged in his works. For his experience, or practiſe (the chief help to attain the higheſt perfection in this Art) it was wonderfull great, as you may collect by his voyages recorded in the laſt part of this work; as alſo by that which *James Guillemau*, Surgeon to the *French* King, a man both learned and judicious in his profeſſion, avers, ſpeaking of his own education and progreſſe in the Art of Surgery. I ſo laid (* ſaith he) the firſt foundation of this Art in the Hoſpitall of *Paris*, being as it were, an ample Theater of wounds and diſeaſes of all kindes, that for two whole years, during which time I was there converſant, nothing was conſulted of, nothing performed, the Phyſitians, and Surgeons being preſent, whereof I was not an Auditor or Actor. There flouriſhed at theſe times, and yet doth, *Ambroſe Parey*, principall Surgeon to the moſt Chriſtian King, the Author of this great work, moſt renowned for the moſt gracious favour of Kings, Princes and Nobles towards him, for his Authority amongſt his equals, for his Chirurgicall operations amongſt all men. Therefore I earneſtly endeavoured to be received into his family, as unto another *Machaon*, or *Podalirius*: once admitted, I ſo by all dutifulneſſe and due reſpect acquired his favour, that he, unleſſe I were preſent and aſſiſting, did nothing (ſuch is his naturall gentleneſſe and curteſie to all ſuch as are ſtudious of the Art) at home or abroad, in the field, in the tents, or laſtly in this famous City of *Paris*, about the bodies of Dukes, Noblemen, or Citizens, in whoſe cure, he by the ardent deſire of them all, had ſtill the prime place.

* In his Epiſtle prefixed before the Latin edition of this Author.

Now for this work, hear what this ſame man in the ſame place affirmeth further: I not content with theſe means, which may ſeem ſufficient, and too much, as deſirous to ſatisfie my long thirſt, determined to try whether I could draw, or borrow any thing from ſtrangers, which our men wanted, to the fuller knowledge of Surgery. To this purpoſe I travailed over *Germany*, and then for four years ſpace I followed the *Spaniſh* Army in the Low-countries; whereas I did not only careſully cure the wounded Souldier, but alſo heedfully and curiouſly obſerve what way of curing the renowned *Italian*, *Germane*, and *Spaniſh* Surgeons obſerved, who together with me were imployed in the Hoſpitall, for the healing of the wounded and ſick. I obſerved them all to take no other courſe than that which is here delivered by *Parey*. Such as did not underſtand *French*, got ſome pieces of this work for large rewards, turned into Latin, or ſuch Languages as they underſtood, which they kept charily, and made great ſtore of; and they eſteemed, and admired, and embraced this work alone, above all other works of Surgery, &c. Our Author alſo himſelf, not out of a vain-glorious oſtentation, but a mind conſcious of the truth of his aſſertion, affirms thus much of this his work. I have (ſaith he) ſo certainly toucht the mark whereat I aimed, that Antiquity may ſeem to have nothing wherein it may exceed us, beſides the glory of invention, nor poſterity any thing left, but a certain ſmall hope to add ſome things, as it is eaſie to add to former inventions. Thus much concerning our Author, and the excellency of his work.

Now come I to my tranſlation, the which, as deſiring more a publike good, than private praiſe, I have performed plainly and honeſtly, labouring to fit it to the capacity of the meaneſt Artiſt; for theſe are they to whom I chiefly commend this work, and from whom I expect acceptation. I being by the earneſt perſwaſions of ſome of this profeſſion, chiefly, and almoſt wholly perſwaded and incited to take this pains, who knowing the diſability of underſtanding this Author in Latin or *French*, in many of the weaker members of the large body of their profeſſion, diſperſed over this Kingdome, and the reſt of his Majeſties Dominions, whoſe good, and encreaſe in knowledge may be wiſht, that ſo they may be the better inabled to do good to ſuch as ſhall implore their aid in their profeſſion.

# To the Reader.

There are ſome (I know) will blame me for Engliſhing this work, as laying open the myſteries of a worthy Art, to the unworthy view of the vulgar. To ſuch I could anſwer as * *Ariſtotle* did to *Alexander*: but for the preſent I will give them theſe, which I think may ſatisfie any but the purpoſely malicious: the firſt is drawn from the goodneſſe of the thing, as intended for thoſe that want ſuch guides to direct them in their Art; for it is commonly granted, that, *Bonum quo communius eo melius.* Secondly, it hath been the cuſtome of moſt Writers in all Ages and Countries thus to do: *Hippocrates*, *Galen*, and the other Greeks, writ in their mother tongue the myſteries of their Art: thus did *Celſus*, *Serenus*, and others in Latin: *Meſue*, *Avicen*, *Serapio*, and others, in Arabick; as alſo, to go no further, our Author writ this work in his native *French*, and learned men have done the like in this, and all other Arts. And it is a great hinderance to us in theſe dayes, that we muſt be forced to learn to underſtand two or three tongues, before we can learn any ſcience, whereas the Ancients learned and taught theirs in their mother tongue: ſo that they ſpent a great deal leſſe time about words, and more upon the ſtudy of that Art or Science they intended to learn and follow. Thirdly, I muſt tell you, that, *Ex libris nemo evaſit Artifex*, No man becomes a workman by book: ſo that unleſſe they have had ſome inſight in the Art, and be in ſome ſort acquainted both with the tearms of Art; as alſo with the knowledge and uſe of the inſtruments thereto belonging, if by reading this, or any other book of the like naaure they becomes Surgeons, I muſt needs liken them (as *Galen* doth another ſort of men *) to Pilots by book only: to whoſe care, I think none of us would commit his ſafety at Sea, nor any if wiſe, will commit themſelves to theſe at land, or Sea either, unleſſe wholly deſtitute of other.

*Vide Aul. Gel. l.20.c.4.*

*Gal. de ſimp. l.6. Τοῖς ἐκ βιβλίων Κυβερνήταις.*

The other things whereof I muſt alſo give you notice, are theſe. The figures in the Anatomy are not the ſame uſed by my Author (whoſe were according to thoſe of *Veſalius*) but according to thoſe of *Bauline*, which were uſed in the work of Dr. *Crook*; and theſe indeed are the better and more compleat. Alſo pag. 528. I thought it better to give the true figure of the Helmet floured Aconite, mentioned out of *Pliny*, than to reſerve the faigned picture of *Matthiolus*, which in our Author was encreaſed with the further fiction of a Helmet. I have in ſome few places in the margent, which you ſhall find marked with a ſtar, put ſhort annotations, for the better illuſtration of that which is obſcure, &c. I have alſo in the Text to the ſame purpoſe, here and there put two or three words, contained in theſe limits [ ], which I find here and there turned into a plain Parentheſis, eſpecially toward the latter end of the book, but the matter is not great. Further I muſt acquaint you that the Apologie and Voiages, being the laſt part of this work, and not in the Latin, but *French* editions, were tranſlated into *Engliſh* out of *French* by *George Baker*, a Surgeon of this City, ſince that time, as I hear, dead beyond the Seas.

This is all, Courteous Reader, that I have thought neceſſary to acquaint thee withall concerning this, which I would deſire thee to take with the ſame mind that it is preſented to thee, by him that wiſheth thee all happpineſſe.

THOMAS JOHNSON.

# THE AUTHORS EPISTLE DEDICATORIE

## To Henry the third, the most Christian King of *France* and *Poland*.

*Even as (most Christian King) we see the members of mans body by a friendly consent are alwayes busied, and stand ready to perform those functions for which they are appointed by nature, for the preservation of the whole, of which they are parts; so it is convenient that we, which are, as it were, Citizens of this earthly Common-weal should be diligent in the following of that calling which (by Gods appointment) we have once taken upon us: and content with our present estate, not carried away with rashnesse and envy, desire different and divers things whereof we have no knowledg. He which doth otherwise, perverts & defiles with hated confusion the order and beauty, on which this Univers consists. Wherefore when I considered with my self, that I was a member of this great Mundane body, and that no altogether unprofitable; I endeavoured earnestly, that all men should be acquainted with my duty, and that it might be known how much I could profit every man. For God is my witnesse, and all good men known that I have now laboured fifty years with all care and pains in the illustration and amplification of Chirurgery; and that I have so certainly touched the mark whereat I aimed, that Antiquity may seem to have nothing wherein it may exceed us, beside the glory of invention; nor posterity any thing left but a certain small hope to add some things, as it is easie to add to former inventions. In performance whereof, I have been so prodigall of my self, my watchings, faculties and means, that I spared neither time, labour, nor cost, whereby I might satisfie and accomplish my own desires, this my great work, add the desires of the studious. Neither may we doubt but their studies would at length wax cold, if they only furnished with the Theorick and Precepts in Schools and that with much labour, should see no manuall operation, nor manifest way of performing the Art. For which cause I seeking the praise and profit of the* French *Nation, even with the*

*hinderance of my particular estate, have endeavoured to illustrate and increase Chirurgery, hitherto obscure either by the infelicity of the former ages, or the envy of the Professors; and not only with precepts and rules, but being a lover of carved works I beautified it with 300. forms, or graven figures, and apt delineations, in which whosoever shall attentively look shall find five hundred anatomicall or organicall figures belonging to the Art, (if they be reckoned particularly). To every of these I have given their names and shewed their use, lest they should seem to have been put in vainly for ostentation or delight. But although there be few men of this profession which can bring so much authority to their writings either with reason, or experience as I can; notwithstanding I have not been so arrogant, but intending to publish my work, I first communicated it with men the most excellent in the Art of Physick, who gave me greater incouragement to perfect and publish it, that it might be in common use: professing they wished nothing more, than that it might be turned into* Latin, *so by which means it should bee known to forain Nations, that there is no kind of Learning which is not delivered with great dexterity of wit in this Kingdom over which you rule. And thus much I dare boldly affirm, that there is scarse any, be he never so stately or supercilious, but that he may here find some thing which may delight him, and by which he may better his knowlrdg. Therefore I doubted not to consecrate this book unto your Majesty both as a Pattern and treasury of my labours, aswell in respect of my duty, who am yours by nature and education, as that I might manifest to all, your Highnesse exceeding bounty towards me, in placing me, (having heretofore injoyed the office of principall Chirurgeon under three Kings your Majesties Predecessors) in the same dignity, and that of your own accord. And moreover I did conjecture that it would fall out, as now it doth, that this my work carried through the world by the fame of your Majesties name, should neither fear the face nor view of any, supported by the favour and Majesty of a most invincible* Monarch *and most excellent and renowned Prince. Neither did King* Charles *the ninth of happy memory, incited by the relation of the most gracious Queen his Mother, refuse to read it, being he understood it proceeded from him, who having happily passed all his time in private and publike imployments, and conversed with all men of all sorts, was judged most worthy to obtain this favour, as to have the front of this work adorned and beautified with the splendor of his prefixed name. I encouraged by this hope, desired that my request should passe as by a certain continuation and succession from a most powerfull, to a most Invincible King; and do wholly consecrate these my labours taken for my Countries good unto your sacred Majesty. God grant that your Majesty may have happy successe of all your enterprises abundantly added to* Nestors *years.*

Patis, 8. Feb: Anno Dom. 1579.

Your most Christian Majesties
faithfull Servant

*Ambrose Parey.*

# The Preface.

MOst men derive the Originall of Phyſick from heaven; for thoſe who hold the beſt opinion of the Creation of the world, affirm, the Elements being created and ſeparated each from other, man being not as yet made; incontinently by the divine decree, all herbes and plants with infinite variety of flowers, endued with various ſents, taſtes, colours, and forms, grew and ſprung forth of the bowels of the Earth, enriched with ſo many and great vertues, that it may be thought a great offence to attribute to any other than the deity, the benefit of ſo great a bleſſing ſo neceſſary for ſo many uſes. Neither could Mans Capacity ever have attained to the knowledg of thoſe things without the guidance of the Divine power. For God the great Creator and faſhioner of the World, when firſt he inſpired *Adam* by the breath of his mouth into a living and breathing man, he taught him the nature, the proper operations, faculties and vertues of all things contained in the circuit of this Univerſe. So that if there be any who would aſcribe the glory of this invention to man, he is condemned of ingratitude even by the judgment of *Pliny*. But this knowledg was not buryed in oblivion with *Adam*: but by the ſame gift of God was given to thoſe whom he had choſen and ordained for Phyſick, to put their helping hands to others that ſtood in need thereof. Which opinion was not only received in the common manner and by the tacite conſent of all Nations, but confirmed by *Moſes* in the Scripture. Which thing *Jeſus* the ſon of *Sirach* the wiſeſt amongſt the Jews, hath confirmed ſaying; *Honor the Phyſitian with the honor due unto him, for the moſt High hath created him becauſe of neceſſity: and of the Lord cometh the gift of healing. The Lord hath created Medicins of the Earth, and he that is wiſe will not abhor them. Give place and honour to the Phyſitian, for God hath created him, let him not go from thee, for thou haſt need of him.* The *Græcians* who firſt ſeem more fully and with greater fame to have profeſſed the Art of Phyſick, do in a manner conſent with this opinion, in acknowledging *Apollo* to have been the inventer thereof, neither did they it without a reaſonable cauſe. For whether by *Apollo* they may underſtand the Sun who by its gentle and vitall heat doth bring forth, temper and cheriſh all things; or elſe ſome

*Geneſ.1.*
*Eccleſ.38.1.*

*Heros,*

*Heros*, who incited by an excellent and almoſt divine underſtanding firſt taught and put in practiſe the Medicinall vertues of Herbs; in which ſenſe *Ovid* brings him in ſpeaking thus:

*Herbes are of mine invention, and through all*
*The world, they me the firſt Phyſitian call.*

The originall of Phyſick ariſing from thoſe beginnings ſhall alwayes be celebrated, as celeſtiall, and was increaſed principally after this manner. After *Apollo*, *Æſculapius* his ſon inſtructed by his father reduced this Art being as yet rude and vulgar into a little better and more exquiſite form, for which cauſe he was reputed worthy to be accounted as one of the Gods. At the ſame time flouriſhed *Chiron* the *Centaure*, who for that he excelled in knowledg of Plants, and taught *Æſculapius* (as many report) their faculties, is thought by *Pliny* and ſome others to have been the inventor of Phyſick. *Æſculapius* had two ſons, *Podalirius* and *Machaon*, who following their fathers ſteps and profeſſing Phyſick, did principally beautifie and practiſe that part thereof which is called Chirurgery, and for that cauſe were accounted the Inventers thereof. After thoſe *Aſclepiades* left this Art much inlarged as hereditary to his poſterity; by whoſe ſtudy and diligence, that part of the Art was invented and annexed, which by a more curious skill ſearcheth and cureth thoſe diſeaſes which lye hid within the body. *Hippocrates* the *Coan* the ſon of *Heraclidas*, born of the noble race of *Aſclepiades*, Prince of the Phyſitians that were before him, perfected Phyſick and reduced it into an Art and wrote divers Books thereof in Greek. *Galen* ſucceeded him ſix hundred years after, who was a man moſt famous not only for his knowledg in Phyſick, but alſo in all other ſciences, who faithfully interpreting every thing that was obſcure and difficult in the writings of *Hippocrates*, enlarged the ſcience with many volumes. Thus therefore was the beginning, thus the increaſe and perfecting the Art of Phyſick, as much as can be hoped for from mans induſtry. Although indeed we cannot deny but that Experience hath much profited this Art, as it hath and doth many other. For as men perceived that ſome things were profitable, ſome unprofitable for this or that diſeaſe, they ſet it down, and ſo by diligent obſervation and marking of ſingularities, they eſtabliſhed univerſall and certain precepts and ſo brought it into an Art. For ſo we find it recorded in ancient Hiſtories, before the invention of Phyſick, that the *Babylonians* and *Aſſyrians* had a cuſtom amongſt them to lay their ſick and diſeaſed perſons in the porches and entries of their houſes, or to carry them into the ſtreets and market places, that ſuch as paſſed by and ſaw them, might give them counſel to take thoſe things to cure their diſeaſes, which they had formerly found profitable in themſelves or any other in the like affects, neither might any paſſe by a ſick man in ſilence.

Plin. l. 7. c. 2.

lence. Alſo *Strabo* writes that it was a cuſtom in *Greece* that thoſe which were ſick ſhould reſort to *Æſculapius* his Temple in *Epidaurum*, that there as they ſlept, by their dreams they might be admoniſhed by the God what means they ſhould uſe to be cured; and when they were freed from their diſeaſes, they writ the manner of their infirmities and the means by which they were cured in tables and faſtened them to the pillars of the Temple, not only for the glory of the God, but alſo for the profit of ſuch, as ſhould afterwards be affected with the like maladies. All which tables (as fame reports) *Hippocrates* tranſcribed, and ſo from thoſe drew the Art of Phyſick. Beaſts alſo have added much to this Art. For one man was not only inſtructed by another, but learned alſo much from brute beaſts, for they by the only inſtinct of nature have found out divers herbs, and remedies, by which they freed and preſerved themſelves from infirmities, which might preſently be transferred to mans uſe. Wherefore conſidering that ſuch and ſo many have concurred to bring this Art to perfection, who hereafter dare call in queſtion the excellency thereof? chiefly if he reſpect the ſubject thereof, Mans body, a thing more noble than all other Mundane things, and for which the reſt were created. Which thing moved *Herophilus* in times paſt to call Phyſitians *The hands of the Gods*. For as we by putting forth our hand, do help any man out of the water or mud into which he is fallen: even ſo we do ſuſtain thoſe that are thrown down from the top of health to the gates of death by violence of diſeaſes, with happy medicins, and as it were by ſome ſpeciall and divine gift deliver them out of the jaws of death. *Homer* the Prince of Greek Poets affirms that one Phyſitian is far more worthy than many other men. All Antiquity gave Phyſitians ſuch honour, that they worſhipped them with great veneration as Gods, or the ſons of their Gods. For who is it which is not much delighted with the divine force of healthful medicins, with which (we ſee by dayly experience) Phyſitians, as armed with *Mercuries* rod, do bring back thoſe languiſhing ſouls which are even entring the gates of death? Hence it cometh to paſſe that the divine Poets of ancient times, as *Orpheus*, and *Muſæus*, and *Heſiod*, and the moſt renowned Philoſophers, *Pythagoras*, *Plato*, *Ariſtotle*, *Theophraſtus*, *Chryſippus*, *Cato Cenſorius*, and *Varro*, eſteemed nothing more excellent than to excell in the knowledg of Medicins, and to teſtifie the ſame by written monuments to Poſterity. For what can be more noble and worthy of a generous diſpoſition than to attain to that by the benefit of Phyſick, that adorned with the ornaments of dignity thou mayeſt have power over other men, and favoured of Princes, Kings, and Emperours, mayeſt appoint and preſcribe to them thoſe things which are profitable to preſerve health, and cure their diſeaſes? But if you look for benefit by ſci-

ences;

ences;then know that the profeſſors hereof have beſide ſufficient gain,acquired much honour and many friends. *Hippocrates* coming to *Abdera* to cure *Democritus* of his madneſs, not only the men of the City,but alſo the women,children, and people of every age, ſexe and rank, went forth to meet him, giving him with a common conſent and loud voice the title of a *Tutelary* Deity and father of their Country. But the *Athenians*, for freeing their country from the plague,with triumphant pompe celebrated playes to his honour, and bountifully ſet upon his head as if he had been a King, a Crown of gold weighing a 1000. pieces of their golden coin,and erected his ſtatue,f a perpetuall monument of his piety and learning. *Eraſiſtratus* the Nephew of *Ariſtotle* by his daughter, received, freely given him by *Ptolomy* King of *Egypt*, for the cure of his ſon,100. Talents of Gold. The Emperour *Auguſtus* honoured *Antonius Muſa* with a golden ſtatue. *Quintus Stertinius* yearly received out of the Emperours Treaſury 120000. 500. pieces of gold. In the time of our Grandfathers *Petrus Aponenſis* called *Conciliator* was ſo famous through all *Italy* for his knowledg in Phyſick, that he could ſcarſe be intreated to come to any man of faſhion that was ſick,unleſs he gave him 50. crowns, for every day he was abſent from home: but when hee went to cure *Honorius* the Biſhop of *Rome*, he received 400. crowns for every day he was abſent. Our *French* Chronicles relate in what credit & eſtimation *James Cotterius* the Phyſitian was with *Lewis* the 11. King of *France*; for they report he gave him monethly out of his Treaſury 10000. crowns. Phyſick in times paſt hath been in ſuch eſteem with many famous and noble perſonages,that divers Kings and Princes delighted with the ſtudy thereof,and deſirous to attain glory and credit thereby, called ſundry herbs after their own names. For ſo *Gentian* took its name of *Gentius* King of *Illyria*; the herb *Lyſimachia* of *Lyſimachus*, the King of *Macedon*, the *Mithridatick* herb or *Scordium*, of *Mithridates* the King of *Pontus* & *Bithinia*, *Achilla* of *Achylles*, *Centorie* of *Chiron* the *Centaure*; *Artemiſia* of *Artemiſia* the Queen of *Caria*. *Attalus* King of *Pergamus*, *Salomon* of *Judea*, *Evax* of *Arabia*, and *Iuba* the King *Mauritania*, were not only inflamed with a deſire of the knowledg of Plants; but either they have written books of it, or for the great commodity of poſterity, invented by their skil many choiſe antidotes compounded of divers ſimples;neither the deſire of learning this noble ſcience is yet altogether extinct. As may appear by that *Indian* plant *Tobaco*, called by ſome the noble herb, *Catherines* herb and *Medices* herb, but commonly the Queens herb, becauſe *Catherine Medices* the mother of our Kings, by her ſingular ſtudy and induſtry made manifeſt the excellent vertue it hath in curing malign ulcers and wounds, which before was unknown to the *French*. For theſe worthy men underſtood that their glory, thus

In what eſteem Phyſitians have formerly been.

Names given to Plants.

thus faſtened and ingraffed into the deep, and as it were ever living roots of plants, would never decay; but ſhould be propagated to all poſterity in many ſucceeding ages, growing up with their ſprouting and budding ſhouts, ſtalks, flowers and fruits. Neither did theſe famous men whil'ſt they adorned this part of Phyſick ſuffer the other, which treats of the diſſection of mans body, be buried in oblivion, and without their knowledg; as inſtructed with the precepts and learning of the wiſeſt men, how artificiall and unimitable by mortall hand this fabrick of our body is. Neither is it probable that *Apis*, *Oſiris* and *Ptolomy* Kings of *Egypt*, *Solomon*, *Alexander* the great, *Mithridates*, *Attalus*, ſeeing they dedicated themſelves wholly to the contemplation of naturall things; neglected the uſe of Anatomy, and being men moſt deſirous to know themſelves, to have been ignorant of the ſtructure of their own bodies being the habitations of their ſouls immortal and made to the Image of God: ſeeing they obſerved with certain judgment the different lights of the Sun, Moon and Stars; and paſſed over ſo many lands, ſo many ſeas, ſo many regions, ſo far remote one from another, by wayes ſo terrible by reaſon of cold, uncouthneſs, darkneſs, by rocks, by fire and ſword, with great labour, charge and danger of life, only that they might ſatisfie their minds thurſting after the knowledg of things; and to have left untouched a thing truly noble, admirable, and moſt worthy of knowledg, eaſie to be attained by any and to be acquired without any danger of life, or fortunes.

Seeing there be three parts of that Phyſick which at this time we profeſſe, *Chirurgery* which by the uſe of the hand, *Diet* which with a convenient manner of feeding and ordering the body, and *Pharmacy* that by medicins attempt to expell diſeaſes, and preſerve health; The prime Phyſitians do not without reaſon contend w^ch^ of theſe may be accounted the chief. Certainly *Herophilus* had *Pharmacy* in ſuch eſteem, that he thought medicins were firſt mixed and adminiſtred to the ſick by *Apollo* (whom Antiquity thought a great Deity.) And *Pliny* had ſo good an opinion of Diet, that he exclaims; The true remedies and Antidotes againſt diſeaſes are put into the pot and eaten every day by the poor people. Verily all learned men confeſſe that the manner of curing which is performed by diet, is much more facile & proſperous, than that which is done by medicins; as thoſe things which ſought with much labor and coſt are taken with much loathing, and taken are ſcarce retained, but retained they oft work with much labour and pain: Which things long ago moved *Aſclepiades* to exclude the uſe of medicins, as hurtfull to the ſtomach. Yet if we will beleeve *Celſus*, neither of theſe parts merit the preheminence, but both of them give place to Chirurgery. For ſeeing that fortune is very powerfull in diſeaſes, and the ſame Meats and Medicins are often good and often vain,

Phyſick is divided into three parts.

truly

truly it is hard to ſay, whether the health is recovered by the benefit of Diet and *Pharmacy*, or by the ſtrength of the body. Moreover in thoſe caſes, in which we moſt prevail with medicins, although the profit be more manifeſt, yet it is evident that health is often ſought in vain even by theſe things, and often recovered without them. As it may be perceived by ſome troubled with ſore eyes, and others with Quartain feavers, who having been long troubled by Phyſitians are ſometimes healed without them. But the effect of Chirurgery as it is very neceſſary, ſo it is the moſt evident amongſt all the parts of phyſick. For who without Chirurgery can hope to cure broken, or luxated parts, who wounds and ulcers, who the falling of the matrix, the ſtone in the bladder, a member infeſted with a Gangrene or Sphacele? Beſides, this part alſo is the moſt ancient; for *Podalirius* and *Machaon* following their Generall *Agamemnon* to the *Trojane* wars, yeelded no ſmall comfort to their fellow Souldiers. Whom notwithſtanding *Homer* affirms not to have given any help in the Peſtilence, nor in divers other diſeaſes, but only were accuſtomed to heal wounds by inſtruments and medicins.

The excellency of Chirurgery.

And if the difficulty of learning it argue the excellency of the Art, who can doubt but Chirurgery muſt be the moſt excellent, ſeeing that none ought to be accounted a Chirurgeon or which can perform his duty, without the knowledg of Diet and *Pharmacy*? But both the other can perform their parts without Chirurgery if we may beleeve *Galen*. But if we conſider the matter more neerly according to truth; we ſhall underſtand thoſe three parts have a certain common bond and are very near of kindred, ſo that the one implores the aid of the other; neither can the Phyſitian do any thing praiſe-worthy without the conſpiracy and joint conſent of theſe three; therefore in ancient times there was but one performer and uſer of all the three parts. But the multitude of men daily increaſing, and on the contrary mans life decreaſing, ſo that it did not ſeem able to ſuffice for to learn and exerciſe all the three, the workmen divided themſelves. Wherefore that which happens to any man either by lot, or counſell, that let him follow, maintain and only uſe, as mindfull how ſhort his life is, and how long the Art.

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# AN INTRODUCTION OR *COMPENDIOUS WAY TO* CHIRURGERY.

## CHAP. I.

### *What Chirurgery is.*

CHIRURGERY is an Art, which teacheth the way by reason, how by the operation of the hand we may cure, prevent, and mitigate diseases, which accidentally happen unto us. Others have thought good to describe it otherwise; as that, It is that part of Physick which undertaketh the cure of Diseases by the sole industry of the Hand: as, by cutting, burning, sawing off, uniting fractures, restoring dislocations, and performing other works, of which we shall hereafter treat. Chirurgery also is thus defined by the Author of the *Medicinall Definitions*; The quick motion of an intrepid hand joyned with experience; or, an artificiall action by the hand used in Physick, for some convenient intent. Yet none must think to attain to any great perfection in this Art, without the help of the other two parts of Physick; I say, of Diet and Pharmacie, and the divers applications of proper Medicines, respecting the condition of the Causes, Diseases, Symptomes, and the like circumstances, which comprehended under the names of things naturall, not naturall, and besides nature, (as they commonly call them) we intend to describe in their proper place. But if any reply, that there be many which do the works of Chirurgery, without any knowledg of such like things, who notwithstanding have cured desperate Diseases with happy success: Let them take this for an answer, That such things happen rather by chance, than by the industry of the Art; and that they are not provident that commit themselves to such. Because that for some one happy chance, a thousand dangerous errors happen afterwards, as *Galen* (in divers places of his Method) speaks against the Empericks. Wherefore seeing we have set down Chirurgery to be a diligent operation of the hands, strengthened by the assistance of Diet and Pharmacy, we will now shew what, and of what nature the operations of it are.

The definition of Chirurgery.

What necessary for a Chirurgeon.

## CHAP. II.

### *Of Chirurgicall Operations.*

FIve things are proper to the duty of a Chirurgeon; To take away that which is superfluous; to restore to their places such things as are displaced; to separate those things which are joyned together; to joyn those which are separated; and to supply the defects of nature. Thou shalt far more easily and happily attain to the knowledg of these things by long use and much exercise, than by much reading of Books, or daily hearing of Teachers. For speech, how perspicuous and elegant soever it be, cannot so vively express any thing, as that which is subjected to the faithfull eyes and hands.

The nature of a Chirurgeon.

Experience more necessary for a Chirurgeon, than Art.

Examples of taking away that which is superfluous.

We have examples of taking away that which abounds in the Amputation or cutting off a finger, if any have six on one hand, or any other monstrous member that may grow out: in the lopping off a putrefied part inwardly corrupted; in the extraction of a dead child, the secondine, mole, or such like bodies out of a womans womb: In taking down of all Tumors, as Wens, Warts, Polypus, Cancers, and fleshy excrescences of the like nature; in the pulling forth of bullets, of pieces of maile, of darts, arrows, shells, splinters, and of all kind of weapons in what part of the body soever they be. And he taketh away that which redounds, which plucks away the hairs of the ey-lids which trouble the ey by their turning in towards it: who cuts away the web, possessing all the * *Adnata*, and part of the * *Cornea*: who letteth forth suppurated matter: who taketh out stones in what part soever of the body they grow; who puls out a rotten or otherwise hurtfull tooth; or cuts a nail that runs into the flesh: who cuts away part of the *Uvula*, or hairs that grow on the ey-lids: who taketh off a Cataract; who cuts the navill or foreskin of a childe newly born; or the skinny caruncles of womens privities.

* Two tunicles of the eys.

Examples of replacing.

Examples of placing those things which are out of their naturall site, are manifest in restoring dislocated bones; in re-placing of the guts and kall fallen into the cods, or out of the navill or belly by a wound; or of the falling down of the womb, fundament, or great gut, or the eye hanging out of its circle, or proper place.

Example of separating things joined together.

But we may take examples of disjoyning those things which are continued; from the fingers growing together, either by some chance, as burning; or by the imbecillity of the forming faculty: by the disjunction of the membrane called *Hymen*, or any other trouling the neck of the womb; by dissection of the ligament of the tongue, which hinders children from sucking and speaking, and of that which hinders the *Glans* from being uncovered of the foreskin; by the division of a varicous vein, or of a half cut nerve or tendon, causing convulsion; by the division of the membrane stopping the auditory passage, the nose, mouth, or fundament, or the stubborn sticking together of the hairs of the ey-lids. Refer to this place all the works done by Caustick, the Saw, Trepan, Lancet, Cupping-glasses, Incision-knife, Leeches, either for evacuation, derivation, or revulsion sake.

Examples of uniting things disjoined.

The Chirurgeon draws together things separated, which healeth wounds by stitching them, by bolstering, binding, giving rest to, and fit placing the part: which repairs fractures; restoring luxated parts: who by binding the vessel, stayeth the violent effusion of blood: who cicatriceth cloven lips, commonly called Hare-lips: who reduceth to equality the cavities of Ulcers and Fistula's.

Examples of supplying defects.

But he repairs those things which are defective either from the infancy, or afterwards by accident, as much as Art and Nature will suffer; who sets on an ear, an ey, a nose, one or more teeth; who fils the hollowness of the palat eaten by the Pox, with a thin plate of gold or silver, or such like; who supplies the defect of the tongue in part cut off, by some new addition; who fastens to a hand, an arm, or leg with fit ligaments, workmanlike: who fits a doublet bumbasted, or made with iron plates to make the body streight; who fils a shoo too big with cork, or fastens a stocking or sock to a lame mans girdle to help his gate. We will treat more fully of all these in our following Work. But in performing those things with the hands, we cannot but cause pain: (for who can without pain cut off an arm, or leg, divide and tear asunder the neck of the bladder, restore bones put out of their places, open Ulcers, bind up wounds, and apply cauteries, and do such like?) notwithstanding the matter often comes to that pass, that unless we use a judicious hand, we must either die, or lead the remnant of our lives in perpetuall misery. Who therefore can justly abhor a Chirurgeon for this, or accuse him of cruelty? or desire they may be served, as in ancient times the Romans served *Archagatus*, who at the first made him free of the City; but presently after, because he did somewhat too cruelly burn, cut, and perform the other works of a good Chirurgeon, they drew him from his house into the *Campus Martius*, and there stoned him to death, as we read it recorded by *Sextus Cheronæus*, *Plutarch*'s nephew by his Daughter. Truly it was an inhumane kind of ingratitude, so cruelly to murder a man intent to the works of so necessary an Art. But the Senate could not approve the act, wherefore to expiate the crime as well as then they could, they made his Statue in Gold, placed it in *Æsculapius* his Temple, and dedicated it to his perpetuall memory. For my part, I very well like that saying of *Celsus*: A Chirurgeon must have a strong, stable, and intrepid hand, and a mind resolute and mercilesse; so that to heal him he taketh in hand, he be not moved to make more haste than the thing requires; or to cut less than is needfull; but which doth all things as if he were nothing affected with their cries; not giving heed to the judgment of the vain common people, who speak ill of Chirurgeons because of their ignorance.

*Archagatus* the Chirurgeon.

*In præfat. lib. 7.*

The properties of a good Chirurgeon.

## CHAP. III.

### *Of things Naturall.*

THat the Chirurgeon may rightly, and according to Art perform the foresaid works, he must set before his eys certain Indications of working: Otherwise he is like to become an Emperick, whom no Art, no certain reason, but only a blind temerity of fortune moves to boldness and action. These Indications of actions are drawn from things (as they call them) naturall, not naturall, and besides nature, and their adjuncts, as it is singularly delivered of the Ancients, being men of an excellent understanding. Wherefore we will prosecute according to that order, all the speculation of this Art of ours. First therefore things Naturall are so termed, because they constitute and contain the nature of mans body, which wholly depends of the mixture and temperament of the four first bodies, as it is shewed by *Hippocrates* in his book *de Natura humana*: wherefore the consideration thereof belongs to that part of Physick, which is named *Physiologia*; as the examination of things not naturall to *Diætetice*, or Diet, because by the use of such things it endevours to retain and keep health: but *Therapeutice*, or the part which cures the Diseases, and all the affects besides nature, challenges the contemplation of those things which are not agreeable to nature. But the things which are called Naturall, may be reduced to seven heads: besides which there comes into their fellowship, those which we term annexed.

From whence we must draw Indications.

What things are called naturall.

To what part of physick things not naturall pertain.

To what things besides nature.

| | | | |
|---|---|---|---|
| The seven principall heads of things Naturall; are | *Elements*<br>*Temperaments*<br>*Humors*<br>*Parts or members*<br>*Faculties*<br>*Actions*<br>*Spirits.* | To these are annexed, and somwhat near; | *Age*<br>*Sex*<br>*Colour*<br>*Composure*<br>*Time or season*<br>*Region*<br>*Vocation of life.* |

## CHAP. IIII.

### *Of Elements.*

AN Element (by the definition which is commonly received amongst Physitians) is the least and most simple portion of that thing which it composeth: or that my speech may be the more plain: the four first and simple bodies are called Elements; Fire, Air, Water, and Earth; which accommodate and subject themselves as matter to the promiscuous generation of all things which the Heavens engirt, whether you understand things perfectly, or unperfectly mixed. Such Elements are only to be conceived in your mind, being it is not granted to any externall sense to handle them in their pure and absolute nature. Which was the cause that *Hippocrates* expressed them not by the names of substances, but of proper qualities, saying, Hot, Cold, Moist, Dry; because some one of these qualities is inherent in every Element, as his proper and essentiall form, not only according to the excess of latitude, but also of the active faculty; to which is adjoined another simple quality, and by that reason principall, but which notwithstanding attains not to the highest degree of his kind, as you may understand by *Galen* in his first book of Elements. So, for example sake, in the Air we observe two qualities, Heat and Moisture, both principall, and not remitted by the commixture of any contrary quality, for otherwise they were not simple. Therefore thou maist say, What hinders that the principall effects of heat shew not themselves as well in the Air, as in the Fire? because, as we said before, although the Air have as great a heat according to his nature, extent, and degree, no otherwise than Fire hath, yet it is not so great in its active quality. The reason is, because that the calfactory force in the Air is hindered, and dulled by society of his companion and adjoyned quality, that is, Humidity which abateth the force of heat, as on the contrary, drineſs quickneth it. The Elements therefore are endewed with these qualities.

What an Element is.

Elements are understood by reason, not by sense.

Why *Hipp.* expressed the Elements by these names of qualities.

Two principal qualities are in each Element.

Why the Air heats not so vehemently, as the Fire.

| | | | |
|---|---|---|---|
| Names of the substances. | *Fire* | is | *Hot and dry* |
| | *Air* | | *Moist and hot* |
| | *Water* | | *Cold and moist* |
| | *Earth* | | *Cold and dry.* |

Names of the qualities.

These four Elements in the composition of naturall bodies, retain the qualities they formerly had, but that by their mixture and meeting together of contraries, they are somewhat tempered and abated. But the Elements are so mutually mixed one with another, and all with all, that no simple part may be found; no more than in a mass of the Emplaister *Diacalcitheos* you can shew any *Axungia* oil, or Litharge by it self; all things are so confused and

How the Elements may be understood to be mixed in compound bodies.

and united by the power of heat, mixing the ſmalleſt particulars with the ſmalleſt, and the whole with the whole, in all parts. You may know and perceive this concretion of the four Elementary ſubſtances in one compound body, by the power of mixture, in their diſſolution by burning a pile or heap of green wood: For the flame expreſſes the Fire; the ſmoke, the Air; the moiſture that ſweats out at the ends, the Water; and the aſhes, the Earth: You may eaſily perceive by this example ſo familiar and obvious to the ſenſes, what diſſolution is, which is ſucceeded by the decay of the compound body; on the contrary, you may know that the coagmentation, or uniting and joyning into one of the firſt mixed bodies is ſuch, that there is no part ſincere or without mixture. For if the heat which is predominant in the fire, ſhould remain in the mixture in its perfect vigor, it would conſume the reſt by its pernicious neighborhood; the like may be ſaid of Coldneſs, Moiſture, and Drineſs; although of theſe qualities, two have the title of Active, that is, Heat and Coldneſs, becauſe they are the more powerfull; the other two Paſſive, becauſe they may ſeem more dull and ſlow, being compared to the former. The temperaments of all ſublunary bodies ariſe from the commixture of theſe ſubſtances and elementary qualities, which hath been the principall cauſe that moved me to treat of the Elements. But I leave the force and effects of the Elementary qualities to ſome higher contemplation, content to have noted this, that of theſe firſt qualities, (ſo called, becauſe they are primarily and naturally in the four firſt bodies) others ariſe and proceed, which are therefore called the ſecond qualities: as of many, theſe, Heavineſs, Lightneſs, variouſly diſtributed by the four Elements, as the Heat or Coldneſs, Moiſtneſs or Drineſs have more power over them. For of the Elements, two are called light, becauſe they naturally affect to move upwards: the other two heavie, by reaſon they are carryed downward by their own weight. So we think the fire the lighteſt, becauſe it holds the higheſt place of this lower world; the Air, which is next to it in ſite, we account light; for the water which lies next to the Air, we judg heavie; and the earth the center of the reſt we judg to be the heavieſt of them all. Hereupon it is, that light bodies, and the light parts in bodies, have moſt of the lighter Elements; as on the contrary heavie bodies have more of the heavier. This is a brief deſcription of the Elements of this frail world, which are only to be diſcerned by the underſtanding, to which I think good to adjoin another deſcription of other Elements, as it were ariſing or flowing from the commixture of the firſt: For beſides theſe, there are ſaid to be Elements of generation, and Elements of mans body. Which as they are more corporall, ſo alſo are they more manifeſt to the ſenſe. By which reaſon *Hippocrates* being moved, in his Book *de Natura humana*, after he had deſcribed the nature of Hot, Cold, Moiſt, and Dry, he comes to take notice of theſe by the order of compoſition. Wherefore the Elements of our generation, as alſo of all creatures which have blood, are ſeed and menſtruous blood. But the Elements of our bodies, are the ſolid and ſimilar parts ariſing from thoſe Elements of generation. Of this kind are bones, membranes, ligaments, veins, arteries, and many others manifeſt to the eys, which we will deſcribe at large in our Treatiſe of Anatomie.

Why of the firſt qualities, two are active, and two paſſive.

Why the firſt qualities are ſo called.

What the ſecond qualities are.

What Elements light, what heavy.

What the Elements of generation are.

What the Elements of mixt bodies.

## CHAP. V.

### *Of Temperaments.*

What a Temperament is.

A Temperament is defined, a proportionable mixture of hot, cold, moiſt, and dry; or, it is a concord of the firſt diſagreeing faculties. That harmony ſprings from the mixture of the four firſt bodies of the world. This whether Temperament or Concord is given to Plants and brute Beaſts for the beginning of their life, and ſo conſequently for their life and form. But as Plants are inferior in order and dignity to beaſts, ſo their * life is more baſe and infirm, for they have only a growing faculty, by which they may draw an Alimentary juice from the earth, as from their mothers breaſts, to preſerve them and their life, by which they may grow to a certain bigneſs; and laſtly, by which they may bring forth their like for the perpetuall continuance of their kind. But the * life of beaſts, have to the three former, the gift of ſenſe annexed: by benefit whereof, as by a certain inward knowledg they ſhun thoſe things that are hurtfull, and follow thoſe which profit them; and by the power of their will, they move themſelves whither they pleaſe. But the ſoul of man far more perfect and noble than the reſt, ariſeth not from that earthly mixture and temper of the Elements, but acknowledgeth and hath a far more divine off-ſpring; as we ſhall teach hereafter.

† *Anima.* What the life performs in Plants.

* *Anima.* What in beaſts. Mans ſoule comes from above.

They divide a Temperament at the firſt diviſion, into two kinds; as one a temperate, another an untemperate. The untemperate is of two ſorts: The one wholly vicious, which hath altogether exceeded the bounds of mediocrity: The other, which hath ſomewhat ſtrayed from the mediocrity of temper, but notwithſtanding is yet contained within the limits of health: as that which brings no ſuch evident harm to the actions, but that it ſomewhat hinders them, ſo that they cannot ſo well and perfectly perform their duties. But the vicious Temperament doth three manner of wayes corrupt the functions, either by weak-

The manifold diviſion of a Temperament.

A Temperament, *ad Pondus.*

weakning, depraving, or aboliſhing them. For ſo ſtupor, or aſtoniſhment, diminiſheth and ſloweth the quickneſs of motion; convulſion depraves it; the Palſie aboliſheth it, and taketh it away. The temperate Temperament is alſo divided into two kinds; which is either to equality of weight or juſtice. It is called a Temperature to weight which ariſeth from the equall force of exactly concurring qualities, and as placed in a perfect ballance, draws down neither to this nor that part. They think the example of this Temperament to appear in the inner skin of the fingers ends of a man tempered to Juſtice. For ſeeing the moſt exquiſite touch reſides there, they ought to be free from all exceſs of contrariety; for otherwiſe being corrupted by too much heat or cold, moiſture or drineſs, they could give no certain judgment of the tangible qualities. For which thing nature hath excellently provided in the fabrick and coagmentation of the parts, of which the skin conſiſts. For it is compoſed of hot and moiſt fleſh, and therefore ſoft, and of a tendon and nerve cold and dry, and therefore hard; which are not only equally fitted and conjoyned, but wholly confuſed and mixed together, by which it comes, that removed from all extremes of oppoſition, it is placed in the midſt, as a rule to judg of all the exceſſes that happen to the touch. So it was fit the eye, which was to be the inſtrument of ſight, ſhould be tinctured with no certain colour, that it might be the leſs deceived in the judgment of colours. So it was convenient the hearing ſhould not be troubled with any diſtinct ſound, whereby it might more certainly judg of equall and unequall ſounds, not diſtinguiſhed by a ratable proportion; neither was it fit the tongue ſhould have any certain taſte, leſt the acceſs of that taſte ſhould deceive it in knowing and judging of ſo many different taſtes. The Temperature tempered to juſtice, is that, which although it is a little abſent from the exact and ſevere parility of mixed qualities, yet hath that equality which doth fully and abundantly ſuffice for to perform all the functions fitly and perfectly, which nature doth require, wherefore we can judg no otherwiſe of it than by the integrity of the Actions. For hence it took its name; for as diſtributive Juſtice equally gives to every one rewards, or puniſhment according to their deſerts; ſo Nature, having regard to all the parts of the body, gives them all that temper which may ſuffice to perform thoſe duties, for which they are ordained. Let us for an example conſider a Bone; no man doubts, but that, like as the other ſimilar parts of the body, proceeds from the mixture of the four Elements: but nevertheleſs nature weighing the uſe of it, and ordaining it to ſupport the reſt of the body, would have more of the terrene and dry Element infuſed into it, that it might be the ſtronger and firmer to ſuſtain weight. But a Ligament, ſeeing it was made for other uſes, hath leſs of that earthly drineſs than the bone, but more than the fleſh, altogether fitted to its nature. So it hath ſeemed good to nature to endue all the parts of the body, not only with an equall portion, but alſo proportion of Elements and qualities; we call that a Temperament to juſtice: and we ſay, that it is in Plants, brute Beaſts, and all naturall bodies, which enjoy that temper and mediocrity, which may be agreeable to their nature. Hereupon by compariſon ariſe eight kinds of intemperate tempers: As

*Ad pondus, vel ad juſtitiam.*

A Temperament *ad juſtitiam.*

The temperament of a bone.

The kindes of untemperate tempers.

- Four ſimple
  - *Hot* / *Cold* } temperate in { *Drineſſe* and *Moiſture.*
  - *Moiſt* / *Dry* } temperate in { *Heat* and *Cold.*
- Four compounds
  - *Hot* and *Moiſt*
  - *Hot* and *Dry*
  - *Cold* and *Moiſt*
  - *Cold* and *Dry.*

But theſe Temperaments are either of the whole Body, or of ſome part thereof;

- And that either
  - Principal, as
    - the *Brain*
    - the *Heart*
    - the *Liver*
    - the *Stones.* Or
  - Of the reſt of the parts compoſed of other which have no principality in the body.

Again, ſuch Temperaments are either healthfull, which ſuffice perfectly to perform their actions; or unhealthfull, which manifeſtly hurt them, the ſignes whereof may be read deſcribed by *Galen.* And you muſt obſerve that when we ſay the body, or any part of it is hot, we underſtand more hot than is fit for one of that kinde which is tempered to juſtice; as when we ſay a man hath a hot liver, we mean his liver is hotter, than a man juſtly tempered ſhould have; for all other tempers, whether of the whole body, or any of the parts thereof, are to be referred to this; and in the cure of diſeaſes we muſt look upon it, as the mark, and labour to preſerve it by the uſe of convenient things, as much as lies in our power. Wherefore, becauſe it is very neceſſary to know the diſtinction of Temperaments, I have

Lib. 2. *de Temper. & in Arte medica.*

thought good in this place, briefly to handle the Temperaments of the parts of the body, ages, ſeaſons of the year, humors, and medicines. Therefore the temperaments of the parts of our body are of this nature, not only by the judgment of the touch of a mans hand, which is juſtly tempered, (who is often deceived by flowing heat, which ſpread from the heart into all the body, imparts a certain kind of heat to all the parts) but alſo by the rule of their reaſon, compoſure and ſubſtance, as

What the temperaments of mans body are.

A Bone is the moſt dry and cold.

A Griſle leſs than it.

A Ligament leſs than a Griſle.

A Tendon is ſo much dryer and colder than the membrane, by how much it in the ſame temper exceeds a Vein and Artery. Then follow the harder Veins, for the ſofter are in a middle temper of dryneſs and moiſture, like as the skin; although all, both ſoft and hard, are of a cold temper. Wherefore all theſe parts of their own nature are cold and without blood: although the Veins and Arteries wax hot, by reaſon of the heat of the blood they contain, which notwithſtanding alſo borroweth that heat from the heart, as a part moſt hot, and ſofter than the skin; the liver next followeth the heart, in the order of the hotter parts, which is far ſofter than the skin it ſelf: for if, according to *Galens* opinion, the heart is ſomewhat leſs hard than the skin, and that is far harder than the liver, as appears by touching them, it muſt neceſſarily follow that the liver much exceeds the skin in ſoftneſs; I underſtand the skin ſimple, and ſeparated from the fleſh lying under it, to which it firmly cleaves. The fleſh is more moiſt and hot than the skin, by reaſon of the blood diſperſed in it. The ſpinall marrow is colder and moiſter than the skin; but the brain ſo much exceeds it in moiſture, as it is exceeded by the fat. The lungs are not ſo moiſt as the fat; and the ſpleen, and kidneys are of the like nature, and nevertheleſs they are all moiſter than the skin.

*Ad finem, lib. de temper.*

The temperaments of ages.

According to the diverſities of ages, the temperaments both of the whole body, and all its parts, undergo great mutations; for the bones are far harder in old men than in children, becauſe our life is, as it were, a certain progreſs to dryneſs; which when it comes to the height, conſequently cauſeth death. Wherefore in this place we muſt ſpeak of the Temperaments of ages, when firſt we ſhall have defined what an age is. Therefore an age is defined, A ſpace of life in which the conſtitution of the body of its ſelf and own accord, undergoeth manifeſt changes. The whole courſe of life hath four ſuch Ages. The firſt is Childhood, which extends from the birth to the eighteenth year of age, and hath a hot and moiſt temper, becauſe it is next to the hot and moiſt beginnings of life, ſeed, and blood. Youth followeth this, which is prolonged from the eighteenth to the twenty fifth year, and is temperate, and in the midſt of all exceſſes. Mans eſtate ſucceedeth youth, which they deny to extend beyond the thirty fifth year of age, in its proper temper it is hot and dry; whereby it cometh to paſs that then the heat is felt more acride and biting, which in childhood ſeemed milde; becauſe the progreſs of the life to dryneſs, hath much waſted the native humidity.

What an age is.

Old-age divided into two parts.

* Three degrees of the ſecond part of Old-age.

Then ſucceeds Old-age, ever divided into two parts; the firſt whereof extends from the thirty fifth, to the forty ninth year; thoſe of this age are called Old-men, (**but we commonly call them middle-ag'd men.*) The latter is, as it were, divided by *Galen* into three degrees; the firſt whereof are thoſe, who having their ſtrength ſound and firm, undergo civil affairs and buſineſſes: which things thoſe which are in the ſecond degree of Old-age cannot do, becauſe of the debility of their now decaying ſtrength: but thoſe which are in the laſt degree, are afflicted with moſt extreme weakneſs and miſery, and are as much deprived of their ſenſes and underſtanding, as of the ſtrength of their bodies; whereof aroſe this Proverb, *Old men, twice children.* Thoſe Old men of the firſt rank are pleaſant and curteous; and thoſe we ſay, are beginning to grow Old, or in their green Old-age; thoſe of the ſecond ſort delight in nothing but the boord and bed; but old decrepit men of the laſt order, think of nothing elſe, than their graves and monuments. Their firm and ſolid parts are of a cold and dry temperature, by reaſon of the decay of the radicall moiſture, which the inbred heat cauſeth in the continuance of ſo many years. Which thing may happen in a ſhort ſpace, by the vehement flame of the ſame naturall heat, turned by fevers into a fiery heat. But if any to prove Old men moiſt, will object, That they cough up, and ſpit much, I will anſwer him, as an old Doctor once ſaid; That a pitcher filled with water, may pour forth much moiſture; yet no man will deny but that ſuch a veſſel of its own terrene nature and matter is moſt dry; ſo old men may plainly be affirmed to be moiſt, by reaſon of their defect of heat, and abundance of excrements. But this deſcription of ages is not to be taken ſo ſtrictly as alwayes to be meaſured by the ſpaces and diſtances of years, for there are many which by their own miſdemeanor ſeem elder at forty, than others do at fifty.

Old men have their ſolid parts dry.

A compariſon of the four ages to the four ſeaſons of the year

Laſtly, the famous Philoſopher *Pythagoras* divided mans life into four ages, and by a certain proportion compared the whole courſe thereof to the four ſeaſons of the year; as Childhood to the Spring, in which all things grow and ſprout out, by reaſon of plenty and abundance of moiſture. And Youth to the Summer, becauſe of the vigor and ſtrength which men enjoy at that age. And mans eſtate, or conſtant age, to Autumn; for that then

after

after all the dangers of the fore-paſſed life, the gifts of diſcretion and wit acquire a ſeaſonableneſs or ripeneſs, like as the fruits of the earth enjoy at that ſeaſon. And laſtly, he compares Old-age to the ſterile and fruitleſs Winter, which can eaſe and conſolate its tediouſneſs by no other means, than the uſe of fruits gathered and ſtored up before, which then are of a cold and troubleſome condition. But for extreme Old-age, which extends to eighty or a hundred years, it is ſo cold and dry, that thoſe which arrive at that decrepit age are troubleſome, harſh, touchy, froward, crabby, and often complaining, untill at the length deprived of all their ſenſes, tongue, feet, and underſtanding, they doting, return again to childiſhneſs, as from the ſtaff to the ſtart. And thus much of the Temperaments of ages.

The tempers of the ſeaſons of the year.

But now in like manner we will explain the Temperatures of the ſeaſons of the year, which are four; the Spring, Summer, Autumn, Winter. The Spring continues almoſt from the twelfth or thirteenth day of March to the midſt of May; *Hippocrates* ſeemeth to make it hot and moiſt; which opinion ſeemeth not to have ſprung from the thing it ſelf, but from an inveterate error of the ancient Philoſophers, who would fit the Temperaments of the four ſeaſons of the year, as anſwering in proportion to the temperatures of the four ages. For if the matter come to a juſt tryall, all men will ſay, the Spring is temperate, as that which is in the midſt of the exceſs of heat, cold, moiſture and drineſs; not only by compariſon, becauſe it is hotter than Summer, and colder than Winter; but becauſe it hath that quality of its own proper nature. Wherefore it is ſaid of *Hippocrates*, The Spring is moſt holeſome, and leaſt deadly; if ſo be that it keep its native temper, from which if it decline, or ſucceed a former untemperate ſeaſon, as Autumn or Winter, it will give occaſion to many diſeaſes deſcribed by *Hippocrates*; not that it breeds them, but becauſe it brings them to light, which before lay hid in the body. Summer is comprehended in the ſpace of almoſt four months; it is of a hot and dry temper, a breeder of ſuch diſeaſes as proceed from choler, becauſe that humor at this time is heaped up in many bodies by aduſtion of blood bred in the Spring; but all ſuch diſeaſes do ſpeedily run their courſe. The beginning of Autumn, is from the time the Sun enters into Libra, and endures the like ſpace of time as the Spring. But when it is dry, it hath great inequality of heat and cold, for the mornings and evenings being very cold, the noondays on the contrary are exceeding hot. Wherefore many diſeaſes are in Autumn, and then long and deadly, eſpecially if they incline towards Winter; becauſe all daily and ſodain changes to heat and cold are dangerous. The Winter poſſeſſes the remnant of the year, and is cold and moiſt, it increaſes naturall heat, ſtirs up the appetite, and augments Phlegme. It encreaſes heat by *Antiperiſtaſis*, or contrariety of the encompaſſing air, which being then cold, prohibits the breathing out of heat: whereby it happens that the heat being driven in and hindered from diſſipation, is ſtrengthened by co-uniting its forces. But it augments Phlegme, for that men are more greedy, the Appetite being encreaſed by the ſtrengthened heat: from whence proceeds much crudity, and a large ſtore of diſeaſes, eſpecially Chronick or Long, which ſpread and encreaſe rather in this winter-ſeaſon than in any other part of the year. To this diſcourſe of the temper of the ſeaſons of the years, is to be revoked the variety of tempers which happens every day, which certainly is not to be neglected, that there may be place of election, eſpecially if nothing urge. For hither belongs that ſaying of *Hippocrates*; When in the ſame day it is one while hot, another cold, Autumnall diſeaſes are to be expected. Therefore an Indication taken from hence is of great conſequence to the judgment of diſeaſes; for if it agree with the diſeaſe, the diſeaſe is made more contumacious, and difficult to cure. Whereupon the Patient and Phyſitian will have much trouble; but if on the contrary it reclaim and diſſent, the health of the Patient is ſooner to be expected. Neither is it a thing of leſs conſequence to know the cuſtoms and habits of the places and Countreys in which we live; as alſo the inclination of the Heavens, and temperature of the Air; but let us leave theſe things to be conſidered by Naturall Philoſophers, that we may deliver our judgment of the temperaments of *Humors*. Blood, as that which anſwers to the Air in proportion, is of a hot and moiſt nature, or rather temperate, as *Galen* teſtifies; for, ſaith he, it is certain and ſure, that the Blood is neither hot nor moiſt, but temperate, as in its firſt compoſure none of the four firſt Qualities exceeds other by any manifeſt exceſs, as he repeats it upon the 39th Sentence. Phlegm, as that which is of a wateriſh nature, is cold and moiſt; no otherwiſe than Choler being of a fiery temper, is hot and dry. But Melancholy aſſimilated to earth, is cold and dry. This which we have ſpoken in generall of Phlegm and Melancholy, is not always true in every kind of the ſaid Humors. For ſalt Phlegm is of a hot and dry temperature; as alſo all kinds of Melancholy which have aroſe or ſprung by aduſtion from the native and alimentary, as we will teach in the following Chapter. Now the temperaments of Medicines have not the ſame form of judgment, as thoſe things which we have before ſpoken of; as, not from the Elementary quality, which conquering in the contention and mixture, obtains the dominion; but plainly from the effects, which taken or applyed, they imprint in a temperate body. For ſo we pronounce thoſe things, hot, cold, moiſt, or dry, which produce the effects of Heat, Coldneſs, Moiſture, or Dryneſs. But we will defer the larger explication of theſe things to that place, where we have peculiarly appointed

How the ſpring is temperate.

*Aphor. 9. ſect. 3.*

*Aphor. 20. ſect. 3.*

Autumn unequall.

How Winter encreaſes the native heat.

*Aphor. 4 ſect. 3.*

The temperaments of Humors.

*Lib. de natura humana, ad ſent. 36. Sect. 1.*

The temperature of the Blood.

From whence we judg of the temperature of Medicines.

appointed to treat of Medicines; where we will not ſimply enquire whether they be hot or cold, but what degree of heat and cold, or the like other quality: in which ſame place we will touch the temperature and all the nature of taſtes, becauſe the certaineſt judgment of Medicines is drawn from their taſtes. Hitherto of Temperaments; now we muſt ſpeak of Humors, whoſe uſe in Phyſicall ſpeculation is no leſs than that of Temperaments.

## CHAP. VI.

### *Of Humors.*

The knowledg of the Humor is neceſſary. Lib. *De natura Humana.*

TO know the nature of *Humors*, is a thing not only neceſſary for Phyſitians, but alſo for Chirurgeons, becauſe there is no diſeaſe with matter which ariſeth not from ſome one, or the mixture of more *Humors*. Which thing *Hippocrates* underſtanding, writ, every Creature to be either ſick or well according to the condition of the *Humors* in the body. And certainly all putrid feavers proceed from the putrefaction of *Humors*. Neither do any acknowledg any other originall or diſtinction of the differences of Abſceſſes or Tumors: neither do ulcerated, broken, or otherwiſe wounded members hope for the reſtauration of continuity, from other than from the ſweet falling down of Humors to the wounded part. Which is the cauſe that often in the cure of theſe affects, the Phyſitians are neceſſarily buſied in tempering the Blood, that is, bringing to a mediocrity the four Humors compoſing the maſs of blood, if they at any time offend in quantity, or quality. For whether if any thing abound or digreſs from the wonted temper in any exceſs of heat, cold, viſcoſity, groſneſs, thinneſs, or any ſuch like quality, none of the accuſtomed functions will be well performed. For which cauſe thoſe chief helps to preſerve and reſtore health have been divinely invented: *Phlebotomie*, or blood-letting, which amends the quantity of too much blood; and Purging, which corrects and draws away the vicious quality. But now let us begin to ſpeak of the Humors, taking our beginning from the definition.

The helps of Health.

What an Humor is.

An Humor (is called by Phyſitians) what thing ſo ever is liquid and flowing in the body of living Creatures enduced with Blood; and that is either naturall, or againſt nature. The naturall is ſo called becauſe it is fit to defend, preſerve and ſuſtain the life of a Creature. Quite different is the nature and reaſon of that which is againſt nature. Again, the former is either Alimentary or Excrementitious: The Alimentary which is fit to nouriſh the body, is that Humor which is contained in the veins and arteries of a man which is temperate and perfectly well; and which is underſtood by the generall name of Blood, which is let out at the opening of a vein. For Blood otherwiſe taken, is an Humor of a certain kind, diſtinguiſhed by heat and warmneſs from the other Humors comprehended together with it, in the whole maſs of the blood. Which thing, that it may the better be underſtood, I have thought good in this place to declare the generation of Blood by the efficient and materiall cauſes. All things which we eat or drink, are the materials of Blood; which things drawn into the bottom of the Ventricle by its attractive force, and there detained, are turned by the force of concoction implanted in it, into a ſubſtance like to Almond-butter. Which thing, although it appear one and like it ſelf, yet it conſiſts of parts of a different nature, which not only the variety of meats, but one and the ſame meats yeelds of it ſelf. We term this *Chylus*, (when it is perfectly concocted in the ſtomach.) But the * Gate-vein receives it driven from thence into the ſmall Guts, and ſucked in by the Meſeraick-veins, and now having gotten a little rudiment of change in the way, carries it to the Liver, where by the Blood-making faculty, which is proper and naturall to this part, it acquires the abſolute and perfect form of Blood. But with that Blood, at one and the ſame time and action all the Humors are made, whether alimentary or excrementitious. Therefore the Blood, that it may perform its office, that is, the faculty of nutrition, muſt neceſſarily be purged and cleanſed from the two excrementitious Humors: of which the bladder of Gall draws one, which we call yellow Choler; and the Spleen the other, which we term Melancholy. Theſe two Humors are naturall, but not alimentary or nouriſhing, but of another uſe in the body, as afterwards we will ſhew more at large. The Blood freed from theſe two kinds of Excrements, is ſent by the veins and arteries into all parts of the body for their nouriſhment. Which although then it ſeem to be of one ſimple nature, yet notwithſtanding it is truly ſuch, that four different and unlike ſubſtances may be obſerved in it, as, Blood, properly ſo named, Phlegm, Choler, and Melancholy, not only diſtinct in colour, but alſo in taſte, effects, and qualities. For, as *Galen* notes in his book *de Natura humana*, Melancholy is acide or ſour, Choler bitter, Blood ſweet, Phlegm unſavory. But you may know the variety of their effects, both by the different temper of the nouriſhed parts, as alſo by the various condition of the diſeaſes ſpringing from thence. For therefore ſuch ſubſtances ought to be tempered and mixed amongſt themſelves in a certain proportion, which remaining, health remains; but violated, diſeaſes follow. For all acknowledg, that an *Oedema* is cauſed by Phlegmatick; a *Scirrhus*, by Melancholick; an *Eryſipelas*, by Cholerick; and a *Phlegmone*, by

The manifold diviſion of Humors.

The materiall and efficient cauſes of Blood

What the *Chylus* is.

* *Vena porta.*

Where the Blood is perfected.

The receptacles of Choler and Melancholy.

Four unlike Humors in the Blood.

pure

pure and laudable blood. *Galen* teaches by a familiar example of new wine presently taken from the Press, that these 4 substances are contained in that one mass, and mixture of the blood. In which every one observes 4 distinct Essences; for the flower of the wine working up, swims at the top, the dregs fall down to the bottom, but the crude and watery moisture, mixed together with the sweet and vinous liquor, is every where diffused through the body of the wine: the flower of the wine, represents Choler, which bubbling up on the superficies of blood, as it concretes and grows cold, shineth with a golden colour; the dregs, Melancholy, which by reason of its heavinesse ever sinketh downward, as it were, the mud of the blood; the crude and watery portion, Phlegm; for as that crude humor, except it be rebellious in quantity, or stubborn by its quality, there is hope it may be changed into wine, by the naturall heat of the wine; so Phlegm, which is blood half concocted, may by the force of native heat be changed into good and laudable blood. Which is the cause that nature decreed or ordained no peculiar place as to the other 2 Humors, whereby it might be severed from the blood: But the true and perfect liquor of the wine represents the pure blood, which is the more laudable and perfect portion of both the humors of the confused mass. It may easily appear by the following scheme, of what kind they all are, and also what the distinction of these four Humors may be.

A comparison of blood and new wine.

Phlegm is Blood half concocted.

Why it hath no proper receptacle.

| | NATURE. | CONSISTENCE. | COLOUR. | TASTE. | USE. |
|---|---|---|---|---|---|
| Blood is | *Of Nature aery, hot, and moist, or rather temperate.* | *Of indifferent consistence, neither too thick nor too thin.* | *Of Colour red, rosie, or crimson.* | *Of Taste sweet.* | *Of such use, that it chiefly serves for the nourishment of the fleshy parts, and carryed by the vessels, imparts heat to the whole body.* |
| Phlegm is | *Of Nature watery, cold and moist.* | *Of Consistence, liquid.* | *Of Colour, white.* | *Of Taste, sweet, or rather unsavory, for we commend that water which is unsavory.* | *Fit to nourish the brain, and all the other cold and moist parts, to temper the heat of the blood, and by its slipperinesse to help the motion of the joynts.* |
| Choler is | *Of Nature fiery, hot and dry.* | *Of Consistence, thin.* | *Of Colour yellow, or pale.* | *Of Taste, bitter.* | *It provoketh the expulsive faculty of the guts, attenuates the Phlegm cleaving to them, but the Alimentary is fit to nourish the parts of like temper with it.* |
| Melancholy is | *Of Nature earthly, cold, and dry.* | *Of Consistence, grosse and muddy.* | *Of Colour, blackish.* | *Of Taste, acide, sour or biting.* | *Stirs up the Appetite, nourishes the Spleen, and all the parts of like temper to it, as the bones.* |

Blood hath its neareſt matter from the better portion of the *Chylus*: and being begun to be laboured in the veins, at length gets form and perfection in the Liver; but it hath its remote matter from meats of good digestion and quality, seasonably eaten after moderate exercise; but for that, one age is better than another, and one time of the year more convenient than another. For blood is made more copiously in the Spring, because that season of the year comes neareſt to the temper of the blood, by reason of which the blood is rather to be thought temperate, than hot and moist; for that *Galen* makes the Spring temperate; and besides, at that time blood-letting is performed with the best success: Youth is an age very fit for the generation of blood; or by *Galens* opinion, rather that part of life that continues from the 25, to the 35 year of our age. Those in whom this Humor hath the dominion, are beautified with a fresh and rosie colour, gentle, and wel-natured, pleasant, merry, and facetious. The generation of Phlegm, is not by the imbecillity of heat, as some of the Ancients thought; who were perswaded that Choler was caused by a raging, Blood by a moderate, and Phlegm and Melancholy by a remiss heat. But that opinion is full of manifest error: for if it be true that the *Chylus* is laboured and made into blood in the same part, and by the same fire, that is, the Liver; from whence in the same moment of time should proceed that strong and weak heat, seeing the whole mass of the blood different in its four essentiall parts, is perfected and made at the same time, and by the same equall temper of the same part, action, and blood-making faculty; therefore from whence have

*Lib. 1. de temp.*

One and the same heat is the efficient cause of all humors at the same time.

have we this variety of Humors? From hence, for that thoſe meats by which we are nouriſhed, enjoy the like condition that our bodies do, from the four Elements, and the four firſt Qualities: for it is certain, and we may often obſerve, in what kind ſoever they be united or joined together, they retain a certain hot portion imitating the fire; another cold, the water; another dry, the earth; and laſtly, another moiſt like to the air. Neither can you name any kind of nouriſhment, how cold ſoever it be, not Lettuce it ſelf, in which there is not ſome fiery force of heat. Therefore it is no marvail, if one and the ſame heat working upon the ſame matter of *Chylus*, varying with ſo great diſſimilitude of ſubſtances, do by its power produce ſo unlike humors, as from the hot, Choler; from the cold, Phlegm; and of the others, ſuch as their affinity of temper will permit.

The heat of the Sun alone doth melt wax and harden clay.

There is no cauſe that any one ſhould think that variety of humors to be cauſed in us, rather by the diverſity of the active heat, than wax and a flint placed at the ſame time, and in the ſame ſituation of climat and ſoil, this to melt by the heat of the Sun, and that ſcarce to wax warm. Therefore that diverſity of effects is not to be attributed to the force of the efficient cauſe, that is of heat, which is one, and of one kinde in all of us; but rather to the materiall cauſe, ſeeing it is compoſed of the conflux, or meeting together of various ſubſtances, gives the heat leave to work, as it were out of its ſtore, which may make and produce from the hotter part therof Choler, and of the colder and more rebellious Phlegm. Yet I will not deny, but that more Phlegm, or Choler may be bred in one and the ſame body, according to the quicker, or ſlower provocation of the heat; yet nevertheleſs it is not conſequent, that the originall of Choler ſhould be from a more acide, and of Phlegm from a more dull heat in the ſame man. Every one of us naturally have a ſimple heat, and of one kind, which is the worker of divers operations, not of it ſelf, ſeeing it is always the ſame, and like it ſelf, but by the different fitneſs, pliableneſs, or reſiſtance of the matter on which it works. Wherefore Phlegm is generated in the ſame moment of time, in the fire of the ſame part, by the efficiency of the ſame heat, with the reſt of the blood, of the more cold, liquid, crude, and watery portion of the *Chylus*. Whereby it comes to paſs, that it ſhews an expreſs figure of a certain rude or unperfect blood, for which occaſion nature hath made it no peculiar receptacle, but would have it to run friendly with the blood in the ſame paſſages of the veins, that any neceſſity hapning by famin, or indigency, and in defect of better nouriſhment, it may by a perfecter elaboration quickly aſſume the form of blood. Cold and rude nouriſhment make this humor to abound principally in winter, & in thoſe which incline to old-age, by reaſon of the ſimilitude which Phlegm hath with that ſeaſon and age. It makes a man drowſie, dul, fat, and ſwollen up, and haſtneth gray-hairs. Choler is as itwere, a certain heat and fury of humors, which generated in the Liver, together with the blood is carried by the veins and arteries through the whole body. That of it which abounds, is ſent, partly into the guts, and partly into the bladder of the gall, or is conſumed by tranſpiration, or ſweats; It is ſomewhat probable that the Arteriall blood is made more thin, hot, quick, and pallid, than the blood of the Veins, by the commixture of this Alimentary Choler. This Humor is chiefly bred and expel'd in youth, and acrid and bitter meats give matter to it: but great labours of body and mind give the occaſion. It maketh a man nimble, quick, ready for all performance, lean, and quick to anger, and alſo to concoct meats. The melancholick humor, or Melancholy, being the groſſer portion of the blood, is partly ſent from the Liver to the Spleen to nouriſh it, and partly carried by the veſſels into the reſt of the body, and ſpent in the nouriſhment of the parts endued with an earthly drineſs; it is made of meats of groſs juice, and by the perturbations of the mind, turned to fear and ſadneſs. It is augmented in Autumn, and in the firſt and crude Old-age; it makes men ſad, harſh, conſtant, froward, envious and fearfull. All men ought to think, that ſuch Humors are wont to move at ſet hours of the day, as by a certain peculiar motion or tide, Therefore the blood flows from the ninth hour of the night, to the third hour of the day; then Choler to the ninth of the day; then Melancholy to the third of the night; the reſt of the night that remains, is under the dominion of Phlegm. Manifeſt examples hereof appears in the French-Pox. From the elaborat and abſolute maſs of the blood, (as we ſaid before) two kinds of Humors, as excrements of the ſecond concoction, are commonly and naturally ſeparated, the one more groſs, the other more thin. This is called either abſolutely Choler, or with an adjunct, yellow Choler. That is called Melancholy, which drawn by the Spleen in a thinner portion, and elaborate by the heat of the Arteries, which in that part are both many and large, becomes nouriſhment to the part; the remnant thereof is carried by the veiny Veſſel into the orifice of the ventricle, whereby it may not cauſe but whet the appetite, and by its aſtriction ſtrengthen the actions thereof. But yellow Choler drawn into the bladder of the gall, remains there ſo long, till being troubleſome, either in quantity or quality, it is excluded into the guts, whereby it may caſt forth the excrements reſiding in them; the expulſive faculty being provoked by its acrimony, and by its bitterneſs kils the worms that are bred there. This ſame Humor is accuſtomed to die the urine of a yellow colour. There is another ſerous Humor; which truly is not fit to nouriſh but profitable for many other things, which is not an excrement of the ſecond, but of the firſt concoction. Therefore nature would that mixed with the *Chylus*, it ſhould come to

The divers condition of the matter alone, is the cauſe of variety.

The effect of Phlegm.

The effects of Choler.

The effects of Melancholy.

What motions are in each quarter of the body.

The Melancholy Humor doth not cauſe, but whet the appetite.

A ſerous or wheyiſh humor

the

the Liver, and not be voided with the excrements, whereby it might allay the groſneſs of the blood, and ſerve it for a vehicle; for otherwiſe the blood could ſcarce paſs through the capillary veins of the Liver, and paſſing the ſimous and gibbous parts thereof, come to the hollow vein. Part of this ſerous humor ſeparated together with the blood which ſerves for the nouriſhment of the Reins, and ſtraight carried into the bladder, is turned into that urine which we daily make; the other part therefore carryed through all the body together with the blood, performing the like duty of tranſportation, is excluded by ſweats into which it degenerates. Beſides the forenamed, the *Arabians* have mentioned four other humors, which they term Alimentary and ſecondary, as being the next matter of nouriſhment, as thoſe four the blood contains, the remote. They have given no name to the firſt kind, but imagin it to be that humor, which hangs ready to fall like to little drops in the utmoſt orifices of the veins. They call the ſecond kind, * Dew; being that humor, which entred already into the ſubſtance of the part, doth moiſten it. The third they call by a barbarous name, *Cambium*, which already put to the part to be nouriſhed, is there faſtned. The fourth named *Gluten*, or Glew, is only the proper and ſubſtance-making humidity of the ſimilar parts, not their ſubſtance. The diſtinction of the degrees of nutrition recited by *Galen* in his books of Naturall faculties, anſwer in proportion to this diſtinction of humors. The firſt is, that the blood flow to the part that requires nouriſhment; then that being there arrived, it may be agglutinated; then laſtly, that having loſt its former form of nouriſhment, it may be aſſimilated.

Secundary Humors.

* Ros.

Thoſe humors are againſt nature, which being corrupted, infect the body and the parts in which they are contained by the contagion of their corruption, retaining the names and titles of the humors, from whoſe perfection and nature they have revolted, they all grow hot by putrefaction, although they were formerly by their own nature cold. And they are corrupted, either in the veins only, or within and without the veins: In the veins Blood and Melancholy; but both without and within the veins, Choler and Phlegm. When Blood is corrupted in its thinner portion, it turns into Choler, when in its thicker, into Melancholy; for the Blood becomes faulty two manner of ways, either by the corruption of its proper ſubſtance by putrefaction, or by admixtion of another ſubſtance by infection. The Melancholy humor which is corrupted in the veins, is of three ſorts: The firſt is of a Melancholy juice putrefying, and by the force of a ſtrange heat, turned, as it were, into aſhes, by which it becomes aduſt, acrid and biting. The other ariſeth from that Choler which reſembles the yolks of eggs, which by aduſtion becomes leek-coloured, then æruginous, or of a blewiſh green, then red, and laſtly black, which is the very worſt kind of Melancholy, hot, malign, eating, and exulcerating, and which is never ſeen or voided with ſafety. The third comes from Phlegm putrefying in the veins, which firſt degenerates into ſalt Phlegm, but ſtraight by the ſtrength of extraneous heat degenerates into Melancholy.

Humors againſt nature.

Into what Humors the blood when it corrupts, doth degenerate.

The Melancholy Humor corrupted, is of three kinds.

- *Phlegm not naturall is bred, either*
  - In the Veins, and is either
    - Acide and very crude, as which hath had none or very little impreſſion of heat, but that which it firſt had in the ſtomach.
    - Salt, which is bred by the ſweet, putrefying and aduſt, or mixture of aduſt and ſalt particles.
  - Or without the Veins; & is of four ſorts; either
    - Wateriſh, as is that thin moiſture which diſtils from the brain by the noſtrils.
    - Mucous, as when that wateriſh is thickned into filth by the help of ſome accidentall or ſmall heat.
    - Glaſſie, or * Albuminous, reſembling molten glaſs, or rather the white of an egg, and is moſt cold.
    - *Gypſea*, or Plaiſter-like, which is concrete into the hardneſs and form of chalk, as you may ſee in the joints of the fingers in a knotty gout, or in inveterate diſtillations upon the Lungs.

* *Albuminea.*

- *Choler not naturall is bred, either*
  - In the Veins, as the * vitelline (like in conſiſtence to the yolk of a raw egg) which the acrimony of ſtrange heat breeds of yellow Choler, which ſame in diſeaſes altogether deadly, degenerates into green, æruginous, & laſtly into a blue, or colourlike that which is dried by woad.
  - Or in the capacity of the upper belly, as the ventricle, and this is of five kinds:
    - The firſt is called *Porracea*, or leek-coloured, reſembling the juice of a leek in greenneſs.
    - The ſecond *æruginoſa*, or æruginous, like in colour to verdigreaſe.
    - The third blewiſh, or woad-coloured, like the colour died by woad.
    - The fourth red, differing in this from blood, whoſe colour it imitates, that it never cometh into knots, or clods like blood.
    - The fifth very red, generated by the exceſs of the former, which cauſeth burning feavers.

* *Vitellina.*

The

The kinds of ſuch Choler, are often caſt forth by vomit in diſeaſes, the ſtrength of the diſeaſe being paſt; being troubleſome to the parts through which they are evacuated, by their bitterneſs, acrimony, and biting.

*The ſignes of a Sanguine perſon.*

I Think it manifeſt, becauſe the matter and generation of fleſh is principally from blood, that a man of a fleſhy, denſe, and ſolid habit of body, and full of a ſweet and vaporous juice, is of a Sanguine complexion. And the ſame party hath a flouriſhing and roſie colour in his face, tempered as with an equal mixture of white and red; of white, by reaſon of the skin lying utmoſt; of red, becauſe of the blood ſpread underneath the skin: for always ſuch as the humor is, ſuch is the colour in the face. In manners, he is curteous, gentle, eaſie to be ſpoken to, not altogether eſtranged from the love of women, of a lovely countenance and ſmooth forehead, ſeldom angry, but taking all things in good part; for as the inclination of humors is, ſo alſo is the diſpoſition of manners. But blood is thought the mildeſt of all humors; but the ſtrong heat of the inward parts maketh him to eat and drink freely. Their dreams are pleaſant, they are troubled with diſeaſes ariſing from blood, as frequent Phlegmons, and many ſanguine puſtles breaking through the skin, much bleeding, and menſtruous fluxes. Wherefore they can well endure blood-letting, and delight in the moderate uſe of cold and dry things; and laſtly, are offended by hot and moiſt things. They have a great and ſtrong Pulſe, and much urine in quantity, but milde of quality, of an indifferent colour add ſubſtance.

Such as the humor is, ſuch is the colour.

The manners and diſeaſes of Sanguine perſons.

*The ſignes of a Cholerick perſon.*

CHolerick men are of a pale or yellowiſh colour, of a lean, ſlender and rough habit of body, with fair veins and large Arteries, and a ſtrong and quick pulſe: their skin being touched, feels hot, dry, hard, rough and harſh, with a pricking and acrid exhalation which breathes forth of their whole body. They caſt forth much choler by ſtool, vomit and urine. They are of a quick and nimble wit, ſtout, hardy and ſharp vindicators of received injuries, liberall even to prodigality, and ſomwhat too deſirous of glory. Their ſleep is light, and from which they are quickly waked; their dreams are fiery, burning, quick, and full of fury; they are delighted with meats and drinks which are ſomewhat more cold and moiſt, and are ſubject to Tertian and burning feavers, the Phrenſie, Jaundiſe, Inflammations, and other Cholerick puſtles, the Lask, Bloody flux, and bitterneſs of the mouth.

Cholerick are not commonly fat.

The manners and diſeaſes of Cholerick perſons.

*The ſignes of a Phlegmatick perſon.*

THoſe in whom Phlegm hath the dominion, are of a whitiſh coloured face, and ſometimes livid and ſwollen, with their body fat, ſoft, and cold to touch.

They are moleſted with Phlegmatick diſeaſes, as Oedematous tumors, the Dropſie, Quotidian feavers, falling away of the hairs, and catarrhes falling down upon the Lungs, and the *Aſpera Arteria*, or Weaſon: they are of a ſlow capacity, dull, ſlothfull, drowſie; they do dream of rains, ſnows, floods, ſwimming, and ſuch like, that they often imagin themſelves overwhelmed with waters; they vomit up much watery and Phlegmatick matter, or otherwiſe ſpit and evacuate it, and have a ſoft and moiſt tongue.

And they are troubled with a dog-like hunger, if at any time it ſhould happen that their inſipid Phlegm become acide; and they are ſlow of digeſtion, by reaſon of which they have great ſtore of cold and Phlegmatick humors; which if they be carried down into the windings of the Colick-gut, they cauſe murmuring and noiſe, and ſometimes the Colick.

For much wind is eaſily cauſed of ſuch like Phlegmatick excrements wrought upon by a ſmall and weak heat, ſuch as Phlegmatick perſons have, which by its naturall lightneſs is diverſly carried through the turnings of the guts, and diſtends and ſwels them up, and whiles it ſtrives for paſſage out, it cauſeth murmurings and noiſes in the belly, like wind breaking through narrow paſſages.

The manners and diſeaſes of phlegmatick perſons.

From whence noiſe or rumbling in the belly proceeds.

*Signes of a Melancholick perſon.*

THe face of Melancholy perſons is ſwart, their countenance cloudy and often cruell, their aſpect is ſad and froward; frequent Scirrhous, or hard ſwellings, tumors of the Spleen, Hæmorroids, *Varices* (or ſwollen Veins) Quartain feavers, whether continuall or intermitting; Quintain, Sextain, and Septimane feavers: and to conclude, all ſuch wandering feavers or agues ſet upon them. But when it happens the Melancholy humor is ſharpned, either by aduſtion, or commixture of Choler, then Tetters, the black Morphew, the Cancer ſimple and ulcerated, the Leprous and filthy ſcab, ſending forth certain ſcaly and branlike excreſcences, (being vulgarly called Saint *Manis* his evil;) and the Leproſie it ſelf invades them: They have ſmall veins and arteries, becauſe coldneſs hath dominion over them; whoſe property is to ſtraiten, as the quality of heat is to dilate. But if at any time their Veins ſeem big, that largeneſs is not by reaſon of the laudable

Diſeaſes familiar to Melancholy perſons.

laudable blood contained in them, but from much windineſs; by occaſion whereof it is ſomewhat difficult to let them blood; not only, becauſe that when the Vein is opened, the blood flows ſlowly forth, by reaſon of the cold flowneſs of the humors; but much the rather, for that the vein doth not receive the impreſſion of the Lancet, ſliding this way and that way, by reaſon of the windineſs contained in it, and becauſe that the harſh drineſs of the upper skin, reſiſts the edg of the inſtrument. Their bodies ſeem cold and hard to the touch, and they are troubled with terrible dreams, for they are obſerved to ſeem to ſee in the night Devils, Serpents, dark dens and caves, ſepulchers, dead corpſes, and many other ſuch things full of horror, by reaſon of a black vapor, diverſly moving and diſturbing the brain, which alſo we ſee happens to thoſe, who * fear the water, by reaſon of the biting of a mad dog. You ſhall finde them froward, fraudulent, parſimonious, and covetous even to baſeneſs, ſlow ſpeakers, fearfull, ſad, complainers, carefull, ingenious, lovers of ſolitarineſs, man-haters, obſtinate maintainers of opinions once conceived, ſlow to anger, but angred not to be pacified. But when Melancholy hath exceeded natures and its own bounds, then by reaſon of putrefaction and inflammation all things appear full of extreme fury and madneſs, ſo that they often caſt themſelves headlong down from ſome high place, or are otherwiſe guilty of their own death, with fear of which notwithſtauding they are terrified.

From, or by what their Veins are ſwollen.

Their dreams.

* *Hydrophobi.*

Their manners.

But we muſt note that changes of the native temperament, do often happen in the courſe of a mans life, ſo that he which a while agone was Sanguine, may now be Cholerick, Melancholick, or Phlegmatick; not truly by the changing of the blood into ſuch Humors, but by the mutation of Diet, and the courſe or vocation of life. For none of a Sanguine complexion but will prove Cholerick if he eat hot and dry meats, (as all like things are cheriſhed and preſerved by the uſe of their like, and contraries are deſtroyed by their contraries) and weary his body by violent exerciſes, and continuall labors; and if there be a ſuppreſſion of Cholerick excrements, which before did freely flow, either by nature or art. But whoſoever feeds upon Meats generating groſs blood, as Beef, Veniſon, Hare, old Cheeſe, and all ſalt meats, he without all doubt ſliding from his nature, will fall into a Melancholy temper; eſpecially if to that manner of diet, he ſhall have a vocation full of cares, turmoils, miſeries, ſtrong and much ſtudy, carefull thoughts and fears; and alſo if he ſit much, wanting exerciſe, for ſo the inward heat, as it were, defrauded of its nouriſhment, faints, and grows dull, whereupon groſs and droſſie humors abound in the body. To this alſo the cold and dry condition of the place in which we live, doth conduce, and the ſuppreſſion of the Melancholy humor accuſtomed to be evacuated by the Hæmorrhoids, courſes, and ſtools.

From whence the change of the native temper.

How one may become Cholerick.

How Melancholick.

But he acquires a Phlegmatick temper, whoſoever uſeth cold and moiſt nouriſhment, much feeding, who before the former meat is gone out of the belly, ſhall ſtuff his paunch with more, who preſently after meat runs into violent exerciſes, who inhabit cold and moiſt places, who lead their life at eaſe in all idleneſs; and laſtly, who ſuffer a ſuppreſſion of the Phlegmatick humor accuſtomly evacuated by vomit, cough, or blowing the noſe, or any other way, either by nature or art. Certainly it is very convenient to know theſe things, that we may diſcern if any at the preſent be Phlegmatick, Melancholick, or of any other temper, whether he be ſuch by nature, or neceſſity. Having declared thoſe things which concern the nature of Temperaments, and deferred the deſcription of the parts of the body to our Anatomy, we will begin to ſpeak of the Faculties governing this our life, when firſt we ſhall have ſhewn by a practicall demonſtration of examples, the uſe and certainty of the aforeſaid rules of Temperaments.

How Phlegmatick.

## CHAP. VII.

### *Of the Practice of the aforeſaid rules of Temperaments.*

THat we may draw the Theorick of the Temperaments into practice, it hath ſeemed good for avoyding of confuſion which might make this our Introduction ſeem obſcure, if we would proſecute the differences of the Tempers of all men of all Nations, to take thoſe limits which Nature hath placed in the world; as South, North, Eaſt, and Weſt, and, as it were, the Center of thoſe bounds, that the deſcribed variety of Tempers, in colour, habit, manners, ſtudies, actions, and form of life of men that inhabit thoſe Regions ſituated ſo far diſtant one from another, may be as a ſure rule, by which we may certainly judg of every mans temperature in particular, as he ſhall appear to be nearer or further off from this or that Region. Thoſe which inhabit the South, as the *Africans*, *Æthiopians*, *Arabians*, and *Egyptians*, are for the moſt part deformed, lean, duskie coloured, and pale, with black eys and great lips, curled hair, and a ſmall and ſhrill voice. Thoſe which inhabit the Northern parts, as the *Scythians*, *Muſcovites*, *Polonians*, and *Germanes*, have their faces of colour white, mixed with a convenient quantity of blood, their skin ſoft and delicate, their hair long, hanging

Four bounds or Regions of the world.

The forces of temperatures in particulars.

The temperature of the Southern people.

Of the Northern.

down and ſpreading abroad, and of a yellowiſh, or reddiſh colour; of ſtature they are commonly tall, and of a well proportioned, fat and compact habit of body, their eyes gray, their voice ſtrong, loud and big. But thoſe who are ſituated between theſe two former, as the *Italians* and *French*, have their faces ſomewhat ſwart, are well favoured, nimble, ſtrong, hairy, ſlender, well in fleſh, with their eyes reſembling the colour of Goats-eyes, and often hollow eyed, having a cleer, ſhrill and pleaſing voyce.

The Southern people prevail in wit, the Northern in ſtrength.

The Southern people are exceeded ſo much by the Northern in ſtrength and ability of body, as they ſurpaſs them in wit and faculties of the mind. Hence is it you may read in Hiſtories, that the *Scythians*, *Goths* and *Vandals* vexed *Africk* and *Spain* with infinite incurſions, and moſt large and famous Empires have been founded from the North to South; but few or none from the South to the North. Therefore the Northern people thinking all right and law to conſiſt in Arms, did by Duell only determine all cauſes and controverſies ariſing amongſt the Inhabitants, as we may gather by the ancient laws, and cuſtomes of the *Lumbards*, *Engliſh*, *Burgonians*, *Danes* and *Germans*; and we may ſee in *Saxo* the *Grammarian* that ſuch a law was once made by *Fronto* King of *Denmark*. The which cuſtome at this day is every where in force amongſt the *Muſkovites*. But the Southern people have alwayes much abhorred that faſhion, and have thought it more agreeable to Beaſts than Men. Wherefore we never heard of any ſuch thing uſed by the *Aſſyrians*, *Ægyptians*, *Perſians* or *Jews*. But moved by the goodneſs of their wit, they erected Kingdomes and Empires by the onely help of Learning and hidden ſciences. For ſeeing by nature they are Melancholik, by reaſon of the dryneſs of their temperature, they willingly addict themſelves to ſolitarineſs and contemplation, being endued with a ſingular ſharpneſs of wit. Wherefore the *Æthiopians*, *Egyptians*, *Africans*, *Jews*, *Phœnicians*, *Perſians*, *Aſſyrians*, and *Indians*, have invented many curious ſciences, revealed the Myſteries and ſecrets of Nature, digeſted the Mathematiques into order, obſerved the motions of the heavens, and firſt brought in the worſhip and religious ſacrifices of the gods: Even ſo far that the *Arabians* who live only by ſtealth, aud have only a Waggon for their houſe, do boaſt that they have many things diligently and accurately obſerved in Aſtrology by their Anceſtors, which every day made more accurate and copious, they, as by an hereditary right, commend to poſterity, as it is recorded by *Leo* the *African*. But the Northern people, as the *Germans*, by reaſon of the aboundance of humors and blood, by which the mind is as it were oppreſt, apply themſelves to works obvious to the ſenſes, and which may be done by the hand. For their minds oppreſt with the earhtly maſs of their bodies, are eaſily drawn from heaven and the contemplation of Celeſtiall things, to theſe inferior things, as to find out Mines by digging, to buy and caſt metalls, to draw and hammer out works of Iron, ſteel and braſs. In which things they have proved ſo excellent, that the glory of the Invention of Guns and Printing belongs to them.

The Southern people learned and religious.

The Northern famous Warriours, and Artificers.

The endowments of ſuch as inhabit between them.

The people who inhabit the middle regions between theſe, are neither naturally fit for the more abſtruſe ſciences, as the Southern people are, nor for Mechanick works, as the Northern, but intermeddle with civil affairs, commerce and Merchandizing. But are endued with ſuch ſtrength of body as may ſuffice to avoid and delude the crafts and arts of the Southern Inhabitants; and with ſuch wiſdom as may be ſufficient to reſtrain the fury and violence of the Northern. How true this is, any one may underſtand by the example of the *Carthaginians* and *Africans*, who when they had held *Italy* for ſome years by their ſubtile counſels, crafty ſleights and devices; yet could not eſcape, but at the length their Arts being deluded, and they ſpoiled of all their fortunes, were brought in ſubjection to the *Romans*. The *Gothes*, *Hunnes* and other Northern people have ſpoiled and overrun the *Romane* Empire by many incurſions and inroads, but deſtitute of counſell and providence, they could not keep thoſe things which they had gotten by Armes and valour. Therefore the opinion of all Hiſtorians is agreeing in this, that good laws, the form of governing a Common-wealth, all politick ordinances, the Arts of diſputing and ſpeaking, have had their beginnings from the *Greeks*, *Romans* and *French*. And from hence in times paſt and at this day a greater number of Writers, Lawyers and Counſellors of State have ſprung up, than in all the whole world beſides. Therefore that we may attribute their gifts to each Region, we affirm that, The Southern people are born and fit for the Studies of learning, the Northern for warres, and thoſe which be between them both for Empire and rule. The *Italian* is naturally wiſe, the *Spaniard* grave and conſtant; the *French* quick and diligent, for you would ſay hee runs when he goes, being compared to the ſlow and womaniſh pace of the *Spaniard*, which is the cauſe that *Spaniards* are delighted with *French* ſervants for their quick agility in diſpatching buſineſs. The Eaſtern people are ſpecially indued with a good, firm and well tempered wit, not keeping their counſels ſecret and hid. For the haſte is of the nature of the Sun, and that part of the day which is next to the riſing of the Sun is counted the right ſide and ſtronger; and verily in all things living the right ſide is alwayes the more ſtrong and vigorous. But the Weſtern people are more tender and effeminate, and more cloſe in their carriage and mind,

The Northern know how to overcome, but not how to uſe the victory.

The aboundance of counſellors and Lawyers from *France* and *Italy*.

The manners of the Eaſtern people.

not

not eaſily making any one partaker of their ſecrets. For the Weſt is as it were ſubject to the Moon, becauſe at the change it alwayes inclines to the Weſt, whereby it happens, that it is reputed as nocturnall, ſiniſter and oppoſite to the Eaſt; and the Weſt is leſs temperate and wholſome. Therefore of the winds none is more wholſome than the Eaſt wind which blows from the Weſt with a moſt freſh and healthfull gale, yet it ſeldome blows, and but only at Sun-ſet.

The East wind healthfull.

The Northern people are good eaters, but much better drinkers, witty when they are a little moiſtened with wine, and talkers of things both to be ſpoken and concealed, not very conſtant in their promiſes and agreements, but principal keepers and preſervers of ſhamefaſtneſs and chaſtity, far different from the inhabitants of the South, who are wonderfull ſparing, ſober, ſecret and ſubtle, and much addicted to all ſorts of wicked Luſt. *Ariſtotle* in his Problemes ſaith that thoſe nations are barbarous and cruell, both which are burnt with immoderate heat, and which are oppreſt with exceſſive cold, becauſe a ſoft temper of the Heavens, ſoftens the manners and the mind. Wherefore both, as well the Northern, as Scythians and Germans; and the Southern, as Africans, are cruell; but theſe have this of a certain naturall ſtoutneſs, and ſouldierlike boldneſs, and rather of anger then a wilfull deſire of revenge; becauſe they cannot reſtrain by the power of reaſon the firſt violent motions of their anger by reaſon of the heat of their blood. But thoſe of a certain inbred and inhumane pravity of manners, wilfully and willingly premeditating they perform the works of cruelty, becauſe they are of a ſad and melancholy nature. You may have an example of the Northern cruelty from the Tranſilvanians againſt their ſeditious Captain *George*, whom they gave to be torne in pieces alive and devoured by his Souldiers, (being kept faſting for three dayes before for that purpoſe) who was then unbowelled, and roſted, and ſo by them eaten up. The cruelty of *Hannibal* the Captain of the Carthaginians may ſuffice for an inſtance of the Southern cruelty. He left the Roman Captives wearied with burdens and the length of the way, with the ſoles of their feet cut off; But thoſe he brought into his tents, joyning brethren and kinſmen together he cauſed to fight, neither was ſatisfied with blood before he brought all the victors to one man. Alſo we may ſee the cruell nature of the Southern Americans, who dip their children in the blood of their ſlain enemies, then ſuck their blood, and banquet with their broken and ſqueaſed Limbs.

The North. people great eaters and drinkers.

Who are to be counted Barbarous.

The Northern and Southern have each their Cruelties.

*Valer. Max. lib. 9. cap. 2.*

And as the Inhabitants of the South are free from divers Plethorick diſeaſes, which are cauſed by aboundance of blood, to which the Northern people are ſubject, as Feavers, Defluxions, Tumors, Madneſs with laughter which cauſeth thoſe which have it to leap and dance, (the people commonly tearm it *S. vittus his evill*) which admits of no remedy but Muſick: ſo they are often moleſted with the Frenſie invading with madneſs and fury; by the heat whereof they are often ſo raviſhed and carried beſide themſelves that they foretell things to come; they are terrified with horrible dreams, and in their fits they ſpeak in ſtrange and forain tongues, but they are ſo ſubject to the ſcurfe and all kind of ſcabs and to the Leproſie as their homebred diſeaſe, that no houſes are ſo frequently met withall by ſuch as travell through either of the Mauritania's, as Hoſpitalls provided for the Lodging of Leapers.

The diſeases of the Southern people.

Thoſe who inhabit rough and Mountainous places, are more brutiſh, tough and able to indure labour: but ſuch as dwell in Plains, eſpecially if they be mooriſh, or fenniſh, are of a tender body, and ſweat much with a little labour; the truth of which is confirmed by the Hollanders and Frizlanders. But if the Plain be ſuch as is ſcorched by the heat of the Sun, and blown upon by much contrariety of winds, it breeds men who are turbulent, not to be tamed, deſirous of ſedition and novelty, ſtubborn, impatient of ſervitude, as may be perceived by the ſole example of the Inhabitants of *Narbon* a province of *France*.

Mountainers.

Thoſe who dwell in poor and barren places are commonly more witty and diligent and moſt patient of labours; the truth of which the famous wits of the *Athenians*, *Ligurians* and *Romans*, and the plain country of the *Bœotians* in *Greece*, of the *Campanians* in *Italy*, and of the reſt of the Inhabiters adjoining to the *Ligurian* Sea, approves.

## CHAP. VIII.

### *Of the Faculties.*

A Faculty is a certain power, and efficient cauſe, proceeding from the temperament of the part, and the performer of ſome actions of the body. There are three principall Faculties governing mans body as long as it enjoyes its integrity; the Animall, Vital and Natural. The Animall is ſeated in the proper temperament of the Brain, from whence it is diſtributed by the Nerves into all parts of the body wch have ſenſe & motion. This is of three kinds, for one is Moving, another ſenſitive, the third principall. The ſenſitive conſiſts in the five external ſenſes, ſight, hearing, taſte, ſmel & touch. The moving principally remains in the Muſcles & nerves as the fit inſtruments

What a faculty is.

3. Faculties.

of voluntary motion. The Principall comprehends the Reasoning faculty, the Memory and Fantasie. *Galen* would have the common or inward sense to be comprehended within the compass of the Fantasie, although *Aristotle* distinguish between them.

The Vitall abides in the Heart, from whence heat and life is distributed by the Arteries to the whole body: this is principally hindered in the diseases of the Brest; as the Principall is, when any disease assails the Brain; the prime action of the vitall faculty is Pulsation, and that continued agitation of the Heart and Arteries, which is of threefold use to the body: for by the dilatation of the Heart and Arteries the vitall spirit is cherished by the benefit of the Air which is drawn in; by the contraction thereof the vapours of it are purged and sent forth, and the native heat of the whole body is tempered by them both.

The triple use of the Pulse.

The naturall faculty is threefold.

The last is the Naturall faculty which hath chosen its principall seat in the Liver, it spreads or carries the nourishment over the whole body; but it is distinguished into 3. other faculties; The Generative, which serves for the generation and forming of the Issue in the wombe; the Growing or increasing faculty, which flourisheth from the time the Issue is formed, untill the perfect growth of the solid parts into their full dimensions of length, height and bredth. The nourishing faculty, which as servant to both the other repairs and repays the continuall efflux, and waste of the threefold substance; for Nutrition is nothing else but a replenishing, or repairing whatsoever is wasted or emptied. This nourishing faculty endures from that time the Infant is formed in the wombe untill the end of life. It is a matter of great consequence in Physick to know the 4. other faculties, which as servants attend upon the nourishing faculty; which are the Attractive, Retentive, Digestive, and Expulsive faculty. The Attractive draws that juyce which is fit to nourish the body, that I say which by application may be assimilated to the part. This is that faculty which in such as are hungry draws down the meat scarce chewed, and the drink scarse tasted, into the gnawing and empty stomack. The Retentive faculty is that which retains the nourishment once attracted untill it be fully laboured and perfectly concocted; And by that means it yeelds no small assistance to the Digestive faculty. For the naturall heat cannot perform the office of concoction, unless the meat be embraced by the part, and make some stay therein. For otherwise the meat carryed into the stomach never acquires the form of *Chylus*, unless it stay detained in the wrinkles thereof, as in a rough passage, untill the time of *Chylification*. The Digestive facultie assimilates the nourishment, being attracted and detained, into the substance of that part whose faculty it is, by the force of the inbred heat and proper disposition or temper of the part. So the stomach plainly changes all things which are eat and drunk into *Chylus*, and the Liver turns the *Chylus* into blood. But the Bones and Nerves convert the red and liquid blood which is brought down unto them by the capillary or small veins, into a white and solid substance. Such concoction is far more laborious in a Bone and Nerve, than in the Musculous flesh. For the blood being not much different from its nature, by a light change and concretion turns into flesh. But this Concoction will never satisfie the desire of Nature and the parts, unless the nourishment purged from its excrements, put away the filth and drosse, which must never enter into the substance of the part. Wherefore there do not only two sorts of excrements remain of the first and second Concoction, the one thick, the other thin, as we have said before; but also from the third Concoction which is performed in every part. The one of which we conceive only by reason, being that which vanisheth into Air by insensible transpiration. The other is known sometimes by sweats, sometimes by a thick fatty substance staining the shirt; sometimes by the generation of hairs and nails, whose matter is from fuliginous and earthly excrements of the third Concoction. Wherefore the fourth faculty was necessary which might yeeld no small help to nourishment; it is called the Expulsive, appointed to expell those superfluous excrements which by no action of heat, can obtain the form of the part. Such faculties serving for nutrition are in some parts two-fold; as some common, the benefit of which redounds to the whole body, as in the ventricle, liver and veins; Others only attending the service of those parts in which they remain, and in some parts all these 4. as well common as proper, are abiding and residing as in those parts we now mentioned: some with the 4. proper have only two common, as the Gall, Spleen, Kidnies and Bladder. Others are content only with the proper, as the similar and Musculous parts, who if they want any of these 4. faculties, their health is decayed either by want of nourishment, and ulcer, or otherwise. The like unnaturall affects happen by the deficiency of just and laudable nourishment. But if it happen those faculties do rightly perform their duty, the nourishment is changed into the proper part, and is truly assimilated as by these degrees. First it must flow to the part, then be joyned to it, then agglutinated, and lastly as we have said, assimilated. Now we must speak of the Actions which arise from the faculties.

What Nutrition is.

Four other faculties attend upon the nourishing faculty.

The necessity of the retentive faculty.

Two excrements of every concoction.

The work of the expulsive faculty.

By what degrees the nourishment is assimilated.

## CHAP. IX.

### *of the Actions.*

AN Action or Function is an active motion proceeding from a faculty; for as the faculty depends on the Temperament, so the Action on the faculty, and the Act or work depends upon the Action by a certain order of consequence. But although that the words Action and Act or work are often confounded, yet there is this difference between them, as that the Action signifies the motion used in the performance of any thing; but the Act or work, the thing already done and performed: for example, Nutrition and the Generating of flesh are naturall Actions; but the parts nourished, and a hallow ulcer filled with flesh are the works of that motion, or action. Wherefore the Act ariseth from the Action, as the Action ariseth from the faculty, the integrity or perfection of the instruments concurring in both. For as, if the faculty be either defective, or hurt, no Action will be well performed: so unless the Instruments keep their native and due conformity (which is their perfect health, the operator of the Action proper to the instrument) none of those things, which ought to be, will be well performed. Therefore for the performance of blameless and perfect actions, it is fit a due conformity of the instrument concur with the faculty. But Actions are two fold; for they are either Naturall, or Voluntary. They are tearmed Naturall, because they are performed not by our will, but by their own accord and against our will: As are, that continuall motion of the Heart, the beating of the Arteries, the expulsion of the Excrements, and such other like which are done in us by the Law of Nature whether we will, or no. These Actions flow either from the Liver and veins, or from the Heart and Arteries. Wherefore we may comprehend them under the names of Naturall and Vitall Actions. For we must attribute his Action to each faculty, lest we may seem to constitute an idle faculty, and no way profitable for use. The unvoluntary vitall actions, are the dilatation and contraction of the Heart and Arteries, the which we comprehend under the sole name of the Pulse: by that they draw in, and by this they expell, or drive forth. The unvoluntary vitall actions be,

What an Action is.

An action and and Act are different.

Naturall actions.

Generation, Growth and Nutrition } which proceed from the { Generative, Growing, and Nouriſhing } facultie.

Generation is nothing else then a certain producing or acquiring of matter, and an introducing of a substantiall form into that matter; this is performed by the assistance of two faculties; of the Altering, which doth diversly prepare and dispose the seed and menstruous blood to put on the form of a Bone, nerve, spleen, flesh and such like: of the Forming faculty, which adorns with figure, site, and composition, the matter ordered by so various a preparation.

Growth is an inlarging of the solid parts into all the dimensions, the pristine and ancient form remaining safe and sound in figure and solidity. For the perfection of every growth is judged only by the solid parts; for if the body swell into a mass of flesh, or fat, it shall not therefore be said to be grown: but then only when the solid parts do in like manner increase, especially the bones, because the growth of the whole body follows their increase, even although at the same time it wax lean and pine away.

What Growth is.

Nutrition is a perfect assimilation of that nouriſhment which is digested, into the nature of the part which digests. It is performed by the assistance of 4. subsidiary or helping actions, Attractive, Retentive, Digestive, and Expulsive.

What Nutrition is.

The voluntary actions which we willingly perform, are so called, because we can at our pleasure hinder, stir up, slow or quicken them. They are three in generall, the sensitive, moving, and principall Action. The sensitive * Soul comprehends all things in five senses, in Sight, Hearing, Smell, Taste and Touch. Three things must necessarily concur to the performance of them, the Organ, the *Medium* or mean, and the Object. The principall Organ, or Instrument, is the Animall spirit diffused by the nerves into each several part of the body, by which such actions are performed. Wherefore for the present we will use the Parts themselves for their Organs. The Mean is a Body, which carryes the Object to the Instrument. The Object is a certain externall quality, which hath power by a fit *Medium* or Mean to stir up and alter the Organ. This will be more manifest by relating the particular functions of the senses by the necessary concurring of these three.

Action voluntary.

* *Anima sentiens.*

Sight, is an action of the seeing faculty, which is done by the Eye, fitly composed of its coats and humors, and so consequently the Organicall body of this Action. The Object is a visible quality brought to the Eye. But such an Object is twofold; for either it is absolutely visible of its self, and by its own Nature, as the Sun, the fire, the Moon and Stars: or desires as it were the help of another that it may be actually such, for so by the coming of the light colours, which were visible in power onely, being brought to the Eye, they do seem and appear such as they actually are.

How sight is performed.

But ſuch Objects cannot arrive at the Eye, but through a clear and illuminate *Medium*, as the Air, Water, Glaſſe and all ſorts of Cryſtall.

How hearing. The Hearing hath for its Organ the Ear and Auditory paſſage, which goes to the ſtony bone furniſhed with a Membrane inveſting it, an Auditory Nerve, and a certain inward ſpirit there contained. The Object is every ſound ariſing from the ſmitten or broken Air, and the Colliſion of two bodies meeting together. The *Medium* is the encompaſſing Air which carries the ſound to the Ear.

How ſmelling. Smelling (according to *Galens* opinion) is performed in the Mamillary proceſſes produced from the proper ſubſtance of the brain, and ſeated in the upper part of the noſe: although others had rather ſmelling ſhould be made in the very foremoſt ventricles of the brain. This Action is weak in man in compariſon of other Creatures: the Object thereof is every ſmell, or fumid exhalation breathing out of bodies. The *Medium* by which the Object is carried to the noſes of Men, Beaſts and Birds, is the Air, but to How the taſte. Fiſhes the Water it ſelf. The Action of taſte is performed by the tongue being tempered well and according to nature, and furniſhed with a nerve ſpred over its upper part from * *Sapor.* the third and fourth conjugation of the brain. The Object is * Taſte, of whoſe nature and kinds we will treat more at large in our Antidotary. The *Medium* by the which the Object is ſo carried to the Organ, that it may affect it, is either externall or internall: The externall is that ſpattle which doth as it were anoint and ſupple the tongue; the internall is the ſpongy fleſh of the tongue it ſelf, which affected with the quality of the Object doth preſently ſo poſſeſs the nerve that is implanted in it, that the kind and quality there- How touching. of by the force of the ſpirit may be carryed into the common ſenſe. All parts endued with a nerve enjoy the ſenſe of touching, which is chiefly done, when a tractable quality doth penetrate even to the true and nervous skin, which lyeth under the Cuticle, or ſcarf-skin; we have formerly noted, that it is moſt exquiſite in the skin which inveſts the ends of the fingers. The Object is every tractable quality, whether it be of the firſt rank of qualities, as Heat, Cold, Moiſture, Dryneſs, or of the ſecond, as Roughneſs, Smoothneſs, Heavineſs, Lightneſs, Hardneſs, Softneſs, Rarity, Denſity, Friability, Unctuoſity, Groſneſs, Thinneſs. The *Medium* by whoſe procurement the inſtrument is affected, is either the skin or the fleſh interwoven with many Nerves.

Of motion. The next Action, is that Motion, which by a peculiar name we call voluntary; this is performed and accompliſhed by a Muſcle, being the proper Inſtrument of voluntary Motion. Furthermore every motion of a member poſſeſſing a Muſcle is made either by bending and contraction, or by extention. Although generally there be ſo many differences of voluntary motion, as there are kinds of ſite in place; therefore Motion is ſaid to be made upward, downward, to the right hand, to the left, forward and backward; Hither are referred the many kinds of motions, which the infinite variety of Muſcles produce in How reſpiration may be a voluntary motion. the body. Into this rank of Voluntary Actions, comes Reſpiration, or breathing, becauſe it is done by the help of the Muſcles; although it be chiefly to temper the heat of the Heart. For we can make it more quick, or ſlow as we pleaſe, which are the conditions of a voluntary Motion.

Laſtly, that we may have ſomewhat in which we may ſafely reſt and defend our ſelves againſt the many queſtions which are commonly moved concerning this thing, wee muſt hold, that Reſpiration is undergone and performed by the Animall faculty, but chiefly inThe third principall Action. ſtituted for the vitall.

The principall Action and prime amongſt the Voluntary is abſolutely divided in three, Imagination, Reaſoning and Memory.

Imagination is a certain expreſſing, and apprehenſion which diſcerns and diſtinguiſheth between the forms and ſhapes of things ſenſible, or which are known by the ſenſes.

Reaſoning is a certain judiciall eſtimation of conceived or apprehended forms or figures, by a mutuall collating or comparing them together.

Memory is the ſure ſtorer of all things, and as it were the Treaſury which the mind often unfolds and opens, the other faculties of the mind being idle and not imployed. But becauſe all the forementioned Actions whether they be Naturall, or Animall and voluntary, are done and performed by the help and aſſiſtance of the Spirits; therefore now we muſt ſpeak of the Spirits.

## CHAP. X.

### *Of the Spirits.*

What a ſpirit is. THe Spirit is a ſubtile and aery ſubſtance, raiſed from the purer blood that it might be a vehicle for the faculties (by whoſe power the whole body is governed) to all the parts, and the prime inſtrument for the performance of their office. For they being deſtitute of its ſweet approach doe preſently ceaſe from action, and as dead do reſt from their accuſtomed labours. From hence it

is

is that making a variety of Spirits according to the number of the faculties, they have divided them into three; as one Animall, another Vitall, another Naturall. Spirits three-fold.

The Animall hath taken his seat in the brain; for there it is prepared and made, that from thence conveyed by the Nerves, it may impart the power of sense and motion to all the rest of the members. An argument hereof is, that in the great cold of Winter, whether by the intercepting them in their way, or by the concretion, or, as it were, freezing of those spirits the joynts grow stiff, the hands numb, and all the other parts are dull, destitute of their accustomed agility of motion, and quickness of sense. It is called Animall, not because it is the * Life, but the chief and prime instrument thereof: wherefore it hath a most subtil and aery substance; and enjoys divers names, according to the various condition of the Sensories or seats of the senses into which it enters; for that which causeth the sight, is named the Visive: you may see this by night, rubbing your eys, as sparkling like fire. That which is conveyed to the Auditory passage, is called the Auditive or Hearing: That which is carried to the instruments of Touching, is termed the Tactive; and so of the rest. The Animall spirit. Why so called. * *Anima.*

This Animall spirit is made and laboured in the windings and foldings of the Veins and Arteries of the brain, of an exquisit subtil portion of the vitall brought thither by the *Carotidæ Arteriæ*, or sleepy Arteries; and sometimes also of the pure air, or sweet vapour drawn in by the Nose in breathing. Hence it is, that with Ligatures we stop the passage of this spirit, from the parts we intend to cut off. An Humor which obstructs or stops its passage, doth the like in Apoplexies and Palsies, whereby it happens that the members situate under that place do languish and seem dead, sometimes destitute of motion, sometimes wanting both sense and motion. How it is made.

The Vitall spirit is next to it in dignity and excellency, which hath its chief mansion in the left ventricle of the Heart, from whence, through the Channels of the Arteries, it flows into the whole body, to nourish the heat which resides fixed in the substance of each part, which would perish in short time, unless it should be refreshed by heat flowing thither together with the spirit. And because it is the most subtil next to the Animall, Nature (lest it should vanish away) would have it contained in the Nervous coat of an Artery, which is five times more thick than the coat of the Veins, as *Galen*, out of *Herophilus*, hath recorded. The Vitall spirit.

It is furnished with matter from the subtil exhalation of the blood, and that air which we draw in breathing. Wherefore it doth easily and quickly perish by immoderate dissipations of the spirituous substance, and great evacuations; so it is easily corrupted by the putrefaction of Humors, or breathing in of pestilent air and filthy vapours; which thing is the cause of the so suddain death of those which are infected with the Plague. This spirit is often hindred from entring into some part, by reason of obstruction, fulness, or great inflammations; whereby it follows, that in a short space, by reason of the decay of the fixed and inbred heat, the parts do easily fall into a Gangrene, and become mortified. What the matter of it is.

The Naturall spirit (if such there be any) hath its station in the liver and Veins. It is more gross and dull than the other, and inferior to them in the dignity of the Action, and the excellency of the use. The use thereof is to help the concoction both of the whole body, as also of each severall part, and to carry blood and heat to them. There is some doubt of the Naturall spirit.

Besides those already mentioned, there are other Spirits fixed and implanted in the similar and prime parts of the body, which also are naturall, and Natives of the same place in which they are seated and placed. And because they are also of an aery and fiery nature, they are so joined or rather united to the Native heat, that they can no more be separated from it than flame from heat; wherefore they with these that flow to them, are the principall instruments of the Actions which are performed in each severall part; And these fixed Spirits have their nourishment and maintenance from the radicall and first-bred moisture, which is of an aery and oily substance, and is, as it were, the foundation of these Spirits, and the inbred heat. Therefore without this moisture, no man can live a moment. But also the chief Instruments of life are these Spirits, together with the Native heat. Wherefore this radicall Moisture being dissipated and wasted, (which is the seat, fodder, and nourishment of the Spirits and heat) how can they any longer subsist and remain? Therefore the consumption of the naturall heat, followeth the decay of this sweet and substance-making moisture, and consequently death, which happens by the dissipating and resolving of naturall heat. Fixed Spirits. The radicall Moisture. Naturall death.

But since then these kind of Spirits with the naturall heat, is contained in the substance of each similar part of our body, (for otherwise it could not persist) it must necessarily follow, that there be as many kinds of fixed Spirits, as of similar parts. For because each part hath its proper temper and encrease, it hath also its proper Spirit, and also its own proper fixed and implanted heat, which here hath its abode, as well as its Originall. Wherefore the Spirit and heat which is seated in the bone, is different from that which is impact into the substance of a Nerve, Vein, or such other similar part; because the temper of these parts is different, as also the mixture of the Elements from which they first arose and sprung up. Neither is this contemplation of Spirits of small account, for in these consist all the force and efficacy of our Nature.

These

The uſe and neceſſity of the Spirits.

What the remedy for the diſſipation of the Spirits. What the remedy for oppreſſion of the Spirits is.

Theſe being by any chance diſſipated or waſted, we languiſh; neither is any health to be hoped for, the flour of life withering and decaying by little and little. Which thing ought to make us more diligent, to defend them againſt the continuall efflux of the threefold ſubſtance. For if they be decayed, there is left no proper indication of curing the diſeaſe; ſo that we are often conſtrained, all other care laid aſide, to betake our ſelves to the reſtoring and repairing the decayed powers. Which is done by meats of good juice, eaſie to be concocted and diſtributed; good Wines, and fragrant ſmels.

But ſometimes theſe Spirits are not diſſipated, but driven in and returned to their fountains, and ſo both oppreſs and are oppreſt; whereupon it happens we are often forced to dilate and ſpread them abroad by binding and rubbing the parts. Hitherto we have ſpoke of theſe things which are called Naturall, becauſe we naturally conſiſt of them; it remains that we now ſay ſomewhat of their Adjuncts and Aſſociates by familiarity of Condition.

The Adjuncts and Aſſociates to things Naturall: are,

- *Age*: of which, by reaſon of the ſimilitude of the Argument, we were conſtrained to ſpeak, when we handled the Temperatures.
- *Sex.*
- *Colour*: of which we have already ſpoken.
- The conformation of the *Inſtrumentall* parts.
- *Time*: whoſe force we have alſo conſidered.
- *Region.*
- Order of *Diet*, and condition of *Life*.

## CHAP. XI.

### *Of the Adjuncts of things Naturall.*

What ſex is.

The nature of women.

SEX is no other thing than the diſtinction of Male and Female; in which this is moſt obſervable, that for the parts of the body, and the ſite of theſe parts, there is little difference between them; but the Female is colder than the Male. Wherefore their ſpermaticall parts are more cold, ſoft, and moiſt; and all their naturall actions leſs vigorous and more depraved.

Of Eunuchs.

The Nature of Eunuchs is to be referred to that of women, as who may ſeem to have degenerated into a womaniſh nature, by deficiency of heat; their ſmooth body, and ſoft and ſhrill voice do very much aſſimilate women. Notwithſtanding you muſt conſider, that there be ſome Manly women, which their manly voice, and chin covered with a little hairineſs, do argue: and on the contrary, there are ſome womanizing, or womaniſh men, which therefore we term dainty and effeminate.

Of Hermaphrodites.

The Hermaphrodite is of a doubtfull nature, and in the middle of both ſexes ſeems to participate of both Male and Female.

Colour the bewrayer of the Temperament.

The Colour which is predominant in the habit and ſuperficies of the body, and lyes next under the skin, ſhews the Temperament of what kind ſoever it be; for as *Galen* notes *in Comment. ad Aphor.* 2. *ſect.* 1. Such a colour appears in us, as the contained Humor hath. Wherefore if a roſie hew colour the cheeks, it is a ſign the body abounds with blood, and that it is carried abroad by the plenty of Spirits. But if the skin be dyed with a yellow colour, it argues Choler is predominant; if with a whitiſh and pallid hue, Phlegm; with a ſable and duskie, Melancholy. So the colour of the Excrements which are according to Nature, is not of the leaſt conſideration. For thus, if an Ulcer being broken ſend forth white matter, it argues the ſoundneſs of the part from whence it flows; but if ſanious or bloody, green, blackiſh, or of divers colours, it ſhews the weakneſs of the ſolid part, which could not aſſimilate by concoction the colour of the excrementitious humor. The like reaſon is of unnaturall Tumors: For, as the colour, ſo the dominion of the Humor cauſing or accompanying the ſwelling commonly is.

The perfection of the organicall parts, conſiſts in four things.

The conformity and integrity of the Organicall parts is conſidered by their figure, greatneſs, number, ſituation, and mutuall connexion. We conſider the figure, when we ſay, almoſt all the externall parts of the body are naturally round, not only for ſhew, but for neceſſity, that being ſmooth and no way cornered, they ſhould be leſs obnoxious to externall injuries; we ſpeak of Greatneſs, when we ſay, ſome are large and thick, ſome lank and lean. But we conſider their Number, when we obſerve ſome parts to abound, ſome to want, or nothing to be defective or wanting. We inſinuate Site and Connexion, when we ſearch, whether every thing be in its proper place, and whether they be decently fitted, and well joined together.

We have handled the varieties of the four ſeaſons of the Year, when we treated of Temperaments. But the conſideration of Region (becauſe it hath the ſame judgment that the Air) ſhall be referred to that diſquiſition or enquiry which we intend to make of the Air, amongſt the things not naturall.

The

The manner of life, and order of Diet are to be diligently obſerved by us, becauſe they have great power either to alter, or preſerve the Temperament. But becauſe they are of almoſt infinite variety, therefore they ſcarce ſeem poſſible to fall into Art, which may proſecute all the differences of Diet and Vocations of life. Wherefore if the Calling of Life be laborious, as that of Husbandmen, Mariners, and other ſuch trades, it ſtrengthens and dries the parts of the body. Although thoſe which labour much about Waters, are moſt commonly troubled with cold and moiſt diſeaſes, although they almoſt kill themſelves with labour. Diet.

Again, thoſe which deal with Metals, as all ſorts of Smiths, and thoſe which caſt and work braſs, are more troubled with hot diſeaſes, as Feavers. But if their Calling be ſuch, as they ſit much, and work all the day long ſitting at home, as ſhoomakers; it makes the body tender, the fleſh effeminate, and cauſeth great quantity of excrements. A life as well idle and negligent in body, as quiet in mind, in all riotouſneſs and exceſſes of Diet, doth the ſame. For from hence the body is made ſubject to the Stone, Gravel, and Gout.

That calling of life which is performed with moderate labour, clothing, and diet, ſeems very fit and convenient to preſerve the naturall temper of the body. The ingenious Chirurgeon may frame more of himſelf that may more particularly conduce to the examination of theſe things. Therefore the things naturall, and thoſe which are near or neighbouring to them being thus briefly declared; the Order ſeems to require, that we make enquiry of things not Naturall. The commodities of an indifferent Diet.

## CHAP. XII.

### *Of things not Naturall.*

THe things which we muſt now treat of, have by the later Phyſitians been termed Not-naturall; becauſe they are not of the number of thoſe which enter into the conſtitution or compoſure of mans body; as the Elements, Humors, and all ſuch things which we formerly comprehended under the name of Natural: although they be ſuch as are neceſſary to preſerve and defend the body already made and compoſed. Wherefore they were called by *Galen* Preſervers; becauſe by the due uſe of them the body is preſerved in health. Alſo, they may be called Doubtfull, and Neuters, for that rightly and fitly uſed, they keep the body healthfull, but inconſideratly, they cauſe diſeaſes. Whereby it comes to paſs, that they may be thought to pertain to that part of Phyſick which is of preſerving health; not becauſe ſome of theſe things ſhould be abſolutely and of their own nature wholſom, and others unwholſom; but only by this, that they are, or prove ſo by their convenient, or prepoſterous uſe. Therefore we conſider the uſe of ſuch like things from four conditions, Quantity, Quality, Occaſion, and Manner of uſing: If thou ſhalt obſerve theſe, thou ſhalt attain and effect this, That thoſe things which are of themſelves, are, as it were, doubtfull, ſhall bring certain and undoubted health. For theſe four Circumſtances do ſo far extend, that in them, as in the perfection of Art, the Rules which may be preſcribed to preſerve health are contained. But *Galen* in another place, hath in four words comprehended theſe things not Naturall; as, things Taken, Applyed, Expelled, and to be Done. Things Taken, are thoſe which are put into the body, either by the mouth, or any other way; as the air, meat and drink. Things Applyed, are thoſe which muſt touch the body, as the Air now mentioned, affecting the body with a diverſe touch of its qualities of heat, cold, moiſture, or drineſs. Expelled, are what things ſoever being unprofitable are generated in the body, and require to be expelled. To be Done, are labour, reſt, ſleep, watching, and the like. We may more diſtinctly, and by expreſſion of proper Names, revoke all theſe things to ſix: Why they are called things not naturall. *Galen* 1. *ad Glauconem.* *Lib. de ſanitate tuenda.*

Which are
- *Air.*
- *Meat* and *Drink.*
- *Labor* and *Reſt.*
- *Sleep* and *Watching.*
- *Repletion* and *Inanition*; or things to be expelled, or retained and kept.
- *Perturbations* of the Minde.

## CHAP. XIII.

### *of the Air.*

How neceſſary for life the Air is.

AIR is ſo neceſſary to life, that we cannot live a moment without it; if ſo be that breathing, and much more tranſpiration, be not to be ſeparated from life. Wherefore it much conduceth to know, what Air is wholſom, what unwholſom, and which by contrariety of qualities fights for the Patient againſt the diſeaſe; or on the contrary by a ſimilitude of qualities ſhall nouriſh the diſeaſe, that if it may ſeem to burden the Patient by increaſing or adding to the diſeaſe, we may correct it by Art. So in curing the wounds of the head, eſpecially in winter, we labour by all the means we may to make the air warm. For cold is hurtfull to the Brain, Bones, and the wounds of theſe parts; and heat is comfortable and friendly. But alſo the Air being drawn into the body by breathing when it is hotter than ordinary, doth with a new warmth over-heat the heart, lungs, and ſpirits, and weaken the ſtrength by the diſſipation of the Spirits too much attenuated; ſo being too cold, in like manner the ſtrength of the faculties faints and grows dull, either by ſuppreſſion of the vapors, or by the inſpiſſation or thickning of the Spirits.

What Air is hurtfull.

Therefore to conclude, that Air is to be eſteemed healthfull, which is clear, ſubtil, and pure, free and open on every ſide, and which is far remote from all carion-like ſmels of dead carkaſſes, or the ſtench of any putrefying thing whatſoever: the which is far diſtant from ſtanding pools, and fens, and caves, ſending forth ſtrong and ill vapors; neither too cloudy nor moiſt by the nearneſs of ſome river.

Such an Air, I ſay, if it have a vernall temper, is good againſt all diſeaſes. That Air which is contrary to this, is altogether unhealthfull; as that which is putrid, ſhut up, and preſt by the ſtraitneſs of neighbouring Mountains, infected with ſome noiſom vapor. And becauſe I cannot proſecute all the conditions of Airs, fit for the expelling of all diſeaſes, as which are almoſt infinite; it ſhall ſuffice here to have ſet down, what we muſt underſtand by this word *Air*.

Three things are underſtood by the name of the Air.

Phyſitians commonly uſe to underſtand three things by the name of *Air*; The preſent ſtate of the Air; the Region in which we live; and the ſeaſon of the Year. We ſpoke of this laſt, when we treated of Temperaments. Wherefore we will now ſpeak of the two former. The preſent ſtate of the Air, one while for ſome ſmall time, is like the Spring, that is, temperate; otherwhiles like the Summer, that is, hot and dry; otherwhiles like the Winter, that is, cold and moiſt; and ſometimes like the Autumn, which is unequall; and this laſt conſtitution of the Air is the cauſe of many diſeaſes. When upon the ſame day, it is one while hot, another cold, we muſt expect Autumnall diſeaſes. Theſe tempers and varieties of conſtitutions of the Air, are chiefly and principally ſtirred up by the winds; as which being diffuſed over all the Air, ſhew no ſmall force by their ſodain change. Wherefore we will briefly touch their natures: That which blows from the Eaſt, is called the Eaſt-wind, and is of a hot and dry nature, and therefore healthfull. But the Weſtern-wind is cold and moiſt, and therefore ſickly. The South-wind is hot and moiſt, the Author of putrefaction and putrid diſeaſes. The North-wind is cold and dry, therefore healthy: wherefore it is thought, if it happen to blow in the Dog-days, that it makes the whole year healthfull, and purges and takes away the ſeeds of putrefaction, if any chance to be in the Air. But this deſcription of the four Winds, is then only thought to be true, if we conſider the Winds in their own proper nature, which they borrow from theſe Regions from which they firſt proceed. For otherwiſe they affect the Air quite contrary, according to the diſpoſition of the places over which they came; as Snowie places, Seas, Lakes, Rivers, Woods, or ſandy Plains, from whence they may borrow new qualities, with which they may afterwards poſſeſs the Air, and ſo conſequently our bodies.

*Aphor. 4. ſect. 2.* The force of the Winds.

How the winds acquire other faculties, than they naturally have.

The Weſtwind of it ſelf unwholſom.

Hence it is we have noted the Weſtern-wind unwholſom, and breeding diſeaſes, by reaſon of the proper condition of the Region from whence it came; and ſuch, that is cold and moiſt; the *Gaſcoins* find it truly to their ſo great harm, that it ſeldom blows with them, but it brings ſome manifeſt and great harm, either to their bodies, or fruits of the earth. And yet the *Greeks* and *Latins* are wont to commend it for healthfulneſs, more than the reſt. But alſo the riſing and ſetting of ſome more eminent ſtars, do often cauſe ſuch cold winds, that the whole Air is cooled, or infected with ſome other malign quality. For vapors and exhalations are often raiſed by the force of the Stars, from whence winds, clouds, ſtorms, whirlwinds, lightnings, thunders, hail, ſnow, rain, earthquakes, inundations, and violent raging of the ſea, have their originall. The exact contemplation of which things, although it be proper to Aſtronomers, Coſmographers, and Geographers, yet *Hippocrates* could not omit it, but that he muſt ſpeak ſomething in his book *De Aëre & Aquis*; where he touches by the way, the deſcription of the neighbouring Regions, and ſuch as he knew.

What force ſtars have upon the Air.

From this force of the Air, either hurtfull, or helping in diſeaſes, came that famous obſerva-

obſervation of *Guido* of *Caulias*; That wounds of the head are more difficult to cure at *Paris*, than at *Avignion*, and the plain contrary of wounds of the legs; for the air of *Paris*, compared to that of *Avignion*, is cold and moiſt, wherefore hurtfull and offenſive to the wounds of the head. On the contrary, the ſame air, becauſe it obſcures the ſpirits, incraſſates the blood, condenſates the humors, and makes them leſs fit for defluxions, makes the wounds of the legs more eaſie to be healed, by reaſon it hinders the courſe of the humors, by whoſe defluxion the cure is hindred. But it is manifeſt, that hot and dry places make a greater diſſipation of the naturall heat, from whence the weakneſs of the powers; by which ſame reaſon, the Inhabitants of ſuch places do not ſo well endure blood-letting; but more eaſily ſuffer purgations, though vehement, by reaſon of the contumacie of the humor, cauſed by drineſs. To conclude, the Air changes the conſtitutions of our bodies, either by its qualities, as if it be hotter, colder, moiſter, or drier; or by its matter, as if it be groſſer, or more ſubtil than is fit, or corrupted by exhalations from the earth, or by a ſodain and unaccuſtomed alteration, which any man may prove, who makes a ſodain change out of a quiet air into a ſtormy and troubled with many winds. But becauſe, next to the Air, nothing is ſo neceſſary to nouriſh mans body, as Meat and Drink, I will now begin to ſpeak of them both.

How the air of *Paris* comes to be ill for wounds of the head, and good for thoſe of the leggs.

By what means the air changes our bodies.

## CHAP. XIIII.

### *Of Meat and Drink.*

THat this our Treatiſe of meat and drink may be more brief and plain, I have thought good to part it into theſe heads, as to conſider the goodneſs and ilneſs of both of them, their quantity, quality, cuſtom, delight, order, time, and to accommodate them all to the ages and ſeaſons of the year. We judge of the goodneſs and pravity of meats and drinks, from the condition of the good or vicious humours, or juice which they beget in us. For evill juice cauſeth many diſeaſes. As on the contrary, good juice drives away all diſeaſes from the body, except the fault happen from ſome other occaſion, as from quantity, or too much exceſs. Wherefore it is principally neceſſary, that thoſe who will preſerve their preſent health, and hinder the acceſs of diſeaſes, feed upon things of good nouriſhment and digeſtion, as are good wine, the yolks of egs, good milk, wheaten bread well baked, the fleſh of Capons, Partridge, Thruſhes, Larks, Veal, Mutton, Kid, and ſuch like other, which you may find mentioned in the Books which *Galen* writ, *De Alimentorum facultatibus*; where alſo he examins thoſe which are of evill juice, by their manifeſt qualities, as acrimony, bitterneſs, ſaltneſs, acidity, harſhneſs, and ſuch like.

The goodneſs of nouriſhments.

But unleſs we uſe a convenient quantity and meaſure in our meats, howſoever laudable they be, we ſhall never reap theſe fruits of health we hoped for. For they yeeld matter of diſeaſes, by the only exceſs of their quantity; but we may by this know the force of quantity on both parts, becauſe often the poiſonous quality of meats of ill nouriſhment doth not hurt, by reaſon they were not taken into the body into a great quantity. That meaſure of quantity is chiefly to be regarded in diſeaſes: for as *Hippocrates* ſaith, If any give meat to one ſick of a Feaver, he gives ſtrength to the well, and increaſes the diſeaſe to the ſick, eſpecially if he do not uſe a mean. Wherefore it is a thing of no ſmall conſequence, to know what diſeaſes require a ſlender, and what a large diet; of which thing there is large relation made in the 1 *Sect.* of the Aphoriſms of *Hippocrates*; where he teacheth, the ſick muſt feed more largely in the beginnings of long diſeaſes, whereby they may be enabled to endure the length of the diſeaſe, and laſt to the ſtate thereof. But in ſharp and violent diſeaſes, which preſently come to their height, we muſt uſe a ſlender diet; but moſt ſlender, when the diſeaſe is in the height; and beſides, all our conſultations in this kinde, muſt be referred to the ſtrength of the Patients. But thoſe who enjoy their perfect health, muſt uſe a quantity of meat, agreeable to their evacuation and tranſpiration; for men, by reaſon of the ſtrength of their heat, and the more copious diſſipation of the triple ſubſtance, have greater appetite than women; altogether by the ſame reaſon, that young people, and ſuch as grow, need more frequent and plentifull nouriſhment, than old men; and alſo amongſt young men of the like age, ſome do rightly require more copious nouriſhment than otherſome, that is, according to the quantity of their evacuations and cuſtom. Certainly for gluttony, it is ſuch as may be extended to all; but we all ſhould take ſo much meat and drink, that our powers may be refreſhed and not oppreſſed; for by the decree of *Hippocrates*, theſe be the two compendiary ways of preſerving health; not to be over-filled with meat, and to be quick to work; and thus much of the quantity of meats. Neither muſt theſe who are either ſound, or ſick, have leſs regard to the qualities of their Meats; and thoſe are either the firſt, as heating, cooling, moiſtening, drying; or the ſecond, attenuating, incraſſating, obſtructing, opening, or ſome other-like, working according to the condition of their nature. The manner of our diet is not only to be framed according

Their quantity

The quantity of meats muſt be eſteemed according to the nature of the diſeaſe, and ſtrength of the Patient.

The qualities of meat.

to

to theſe, but alſo to be varied; for the preſent ſtate of ſuch as be in health, requires to be preſerved by the uſe of like things. As hot and moiſt nouriſhment is to be preſcribed to children, as to thoſe which are hot and moiſt: and cold and dry to old men, as to thoſe who are cold and dry; if ſo be that vulgar ſaying be true, that, *Health delights in the uſe of like things.* Yet becauſe Old-age how green and new-begun howſoever it be, is of it ſelf, as it were, a diſeaſe, it ſeems to be more convenient, both to truth, and for health, that old people ſhould eat meats contrary to their nature, that is, hot and moiſt, that ſo we may defer as much as we can, the cauſes of death, cold and drineſs, which haſten the deſtruction of that age. For we muſt reſiſt diſeaſes by the uſe of their contraries, as thoſe things which are contrary to nature. For otherwiſe, as much meat as you give to the ſick, you add ſo much ſtrength to the diſeaſe. And the ſame is the cauſe why *Hippocrates* ſaid, that a moiſt diet is convenient for all ſuch as are ſick of Feavers, becauſe a Feaver is a dry diſtemperature. Therefore we muſt diligently pry into the nature of the diſeaſe, that knowing it, we may endevour to abate its fury by the uſe of contraries.

Old-age is a diſeaſe.

*Aphor.* 16. *ſect.* 1.

The force of Cuſtom.

But if Cuſtom (as they ſay) be another nature, the Phyſitian muſt have a great care of it, both in ſound and ſick. For this ſometimes by little and little, and inſenſibly, changes our naturall temperament, and in ſtead thereof gives us a borrowed temper. Wherefore if any would preſently or ſodainly change a Cuſtom which is ſometimes ill, into a better, truly he will bring more harm than good; becauſe all ſodain changes (according to the opinion of *Hippocrates*) are dangerous. Wherefore if neceſſity require that we ſhould withdraw any thing from our Cuſtom, we muſt do it by little and little, that ſo nature may by degrees be accuſtomed to contraries without violence, or the diſturbance of its uſuall government. For that meat and drink which is ſomwhat worſe, but more pleaſant and familiar by cuſtom, is to be preferred (in *Hippocrates* opinion) before better, but leſs pleaſant and accuſtomed. Hence is it, that Country-men do very well digeſt Beef and Bacon, which commonly they uſe; but will turn into nidorulent vapors, Partridg, Capons, and other meat of good nouriſhment, ſooner than change them into good and laudable *Chylus*. The cauſe of which thing is not only to be attributed unto the property of their ſtronger, & as it were, burning heat, but much more to Cuſtom; which by a certain kind of familiarity, cauſeth that meats of hard digeſtion, are eaſily turned into laudable blood. For the force of Cuſtom is ſo great, that accuſtomed Meats are more acceptable; whereby it comes to paſs, that while the ſtomach delights in them, it more ſtraitly embraces them, and happily digeſts them, without any trouble of loathing, vomiting, or heavineſs. All the contrary meet and happen in the uſe of Meats which are unpleaſant to the taſte and ſtomach. For the ventricle abhorring thoſe things, makes manifeſt how it is troubled by its acide and nidorulent belchings, loathing, nauſeouſneſs, vomit, heavineſs, pain of the head, and trouble of the whole body.

*Aphor.* 90. *ſect.* 2.

*Aphor.* 38. *ſect.* 2.

Accuſtomed meats are more gratefull, and ſo by that means more nouriſhing.

Wherefore we muſt diligently enquire, what Meats the Patient chiefly delighted in, that by offering them, his appetite languiſhing by reaſon of ſome great evacuation, vomit, or the like, may be ſtirred up. For it will be better and more readily reſtored by things acceptable, though they be ſomewhat worſe, as we noted a little before out of *Hippocrates*. By which words he plainly taught, that it is the part of a good and prudent Phyſitian to ſubſcribe to, and pleaſe the palat of his Patient.

The order of eating our meats.

But ſeeing that order is moſt beautifull in all things, it is truly very neceſſary in eating our Meat: for how laudable ſoever the Meats be in their quantity and quality, howſoever familiar by uſe, and gratefull by cuſtom, yet unleſs they be eaten in due order, they will either trouble or moleſt the ſtomach, or be ill, or ſlowly and difficultly concocted; wherefore we muſt diligently obſerve, what Meats muſt be eaten at the firſt, and what at the ſecond courſe; for thoſe Meats which be hard to concoct, are not to be eaten before thoſe which are eaſie of digeſtion; neither dry and aſtringent things, before moiſtening and looſing.

We muſt begin our meals with moiſt or liquid meat.

But on the contrary, all ſlippery, fat, and liquid things, and which are quickly changed, ought to go before, that ſo the belly may be moiſtned; and then aſtringent things muſt follow, that the ſtomach, by their help, being ſhut and drawn together, may more ſtraitly comprehend the Meat on every ſide, and better perform the Chylification by its proper heat united and joined together.

For this cauſe *Hippocrates*, *Lib. de victu in acutis*, commands thoſe things to be always eaten in the morning, which are fit to looſen the belly, and in the evenings ſuch as nouriſh the body. Yet notwithſtanding drink ought not to precede or go before meat, but on the contrary meat muſt precede drink, by the order preſcribed by him.

The time of eating.

Whether ought we in our eating to have leſs care of the time, than we have of the order; for the time of eating of ſuch as are healthfull, ought to be certain and fixt; for at the accuſtomed hour, and when hunger preſſes, any ſound man, and which is at his own diſpoſure may eat, but exerciſe and accuſtomed labors ought to go before; for it is fit, according to the precept of *Hippocrates*, that labor precede meat, whereby the excrements of the third concoction may be evacuated; the native heat increaſed, and the ſolid parts confirmed and ſtrengthened, which are three commodities of exerciſe very neceſſary to

The profit of labour before meat.

the

the convenient taking of meat. But in ſick perſons we can ſcarce attend and give heed to theſe circumſtances of time, and accuſtomed hour of feeding; for that Indication of giving meat to the ſick, is the beſt of all, which is drawn from the motion of the diſeaſe, and the declining of the fit: for if you give meat in feavers, ſpecially the fit then taking the Patient, you nouriſh not him, but the diſeaſe. For the meat then eaten, is corrupted in the ſtomach, and yeelds fit matter for the diſeaſe: For meat(as we noted before out of *Hippocrates*) is ſtrength to the ſound, and a diſeaſe to the ſick, unleſs it be eaten at convenient time, and diligent care be had of the ſtrength of the Patient, and greatneſs of the diſeaſe.

We muſt not give meat in a fit of a Feaver.

But neither is it convenient that the meat ſhould be ſimple, and of one kind, but of many ſorts, and of divers diſhes dreſſed after different forms, leſt nature by the continuall and hatefull feeding upon the ſame meat, may at the length loath it, and ſo neither ſtraitly contain it, nor well digeſt it; or the ſtomach accuſtomed to one meat, taking any loathing thereat, may abhor all other; and as there is no deſire of that we do not know, ſo the dejected appetite cannot be delighted and ſtirred up with the pleaſure of any meat which can be offered. For we muſt not credit thoſe ſuperſtitious or too nice Phyſitians, who think the digeſtion is hindred by the much variety of meats.

Variety of meats.

The matter is far otherwiſe, for by the pleaſure of what things ſoever the ſtomach allured doth require, it embraces them more ſtraitly, and concocts them more perfectly. And our nature is deſirous of variety.

Why variety of meats is good.

Moreover, ſeeing our body is compoſed of a ſolid, moiſt, and airy ſubſtance, and it may happen, that by ſo many labors, which we are compelled to undergo and ſuſtain in this life, one of theſe may ſuffer a greater diſſipation and loſs than another; therefore the ſtomach is neceſſarily compelled to ſeek more variety, leſt any thing ſhould be wanting to repair that which is waſted. But alſo the age and ſeaſon of the year, yeeld Indications of feeding, for ſome things are convenient for a young man, ſome for an old; ſome in ſummer, ſome in winter. Wherefore we ought to know what befits each age and ſeaſon. Children need hot, moiſt, and much nouriſhment, which may not only ſuffice to nouriſh, but increaſe the body. Wherefore they worſt endure faſting, and of them, eſpecially thoſe who are the moſt lively and ſpiritfull. With old men it is otherwiſe, for becauſe their heat is ſmall, they need little nouriſhment, and are extinguiſhed by much. Wherefore old men eaſily endure to faſt; they ought to be nouriſhed with hot and moiſt meats, by which their ſolid parts now growing cold and dry, may be heated and moiſtned, as by the ſweet nouriſhment of ſuch like meats. Middle-ag'd men delight in the moderate uſe of contraries, to temper the exceſs of their too acrid heat. Young people as temperate, are to be preſerved by the uſe of like things.

Indications of feeding, taken from the age.

The manner of Diet in Winter muſt be hot, and inclining to drineſs. Wherefore then we may more plentifully uſe roſt-meats, ſtrong wines and ſpices; becauſe in the Winter-ſeaſon we are troubled with the cold and moiſt air, and at the ſame time, have much heat inwardly; for the inner parts, according to *Hippocrates*, are naturally moſt hot in the Winter and the Spring, but feaveriſh in Summer; ſo the heat of Summer is to be tempered by the uſe of cold and moiſt things, and much drink. In the temperate Spring all things muſt be moderate; but in Autumn, by little and little, we muſt paſs from our Summer to our Winter diet.

Indication from the time of the year.

## CHAP. XV.

### *Of Motion and Reſt.*

HEre Phyſitians admoniſh us, that by the name of Motion, we muſt underſtand all ſorts of exerciſes, as walking, leaping, running, riding, playing at tennis, carrying a burden, and the like. Friction or rubbing is of this kind, which in times paſt was in great uſe and eſteem, neither at this day is it altogether neglected by Phyſitians. They mention many kinds of it, but they may be all reduced to three; as, one gentle, another hard, a third indifferent; and that of the whole body, or only of ſome part thereof. The Friction is called hard, which is made by the rough, or ſtrong preſſure of the hands, ſpunges, or a courſe and new linnen cloth: it draws together, condenſates, binds and hardens the fleſh, yet if it be often and long uſed, at length it rarifies, diſſolves, attenuates, and diminiſhes the fleſh, and any other ſubſtance of the body; and alſo it cauſeth revulſion, and draws the defluxion of humors from one part to another. The gentle Friction, which is performed by the light rubbing of the hand, and ſuch like, doth the contrary; as, ſoftens, relaxes, and makes the skin ſmooth and unwrinkled; yet unleſs it be long continued, it doth none of theſe worthy to be ſpoken of. The indifferent kinds, conſiſting in the mean betwixt the other two, increaſeth the fleſh, ſwels or puffs up the habit of the body, becauſe it retains the blood and ſpirits which it draws, and ſuffers them not to be diſſipated.

What motion ſignifies.

Three kinds of Frictions.

Hard.

Gentle.

Indifferent.

The use of exercises.

The benefit of exercise is great, for it increases naturall heat, whereby better digestion follows, and by that means nourishment, and the expulsion of the excrements; and lastly, a quicker motion of the spirits, to perform their offices in the body, all the ways and passages being cleansed. Besides, it strengthens the respiration, and the other actions of the body, confirms the habit, and all the limbs of the body, by the mutuall attrition of the one with the other; whereby it comes to pass they are not so quickly wearied with labor. Hence we see that Country people are not to be tired with labor.

What the fittest time for exercise.

If any will reap these benefits by exercise, it is necessary that he take opportunity to begin his exercise, and that he seasonably desist from it, not exercising himself violently and without discretion; but at certain times according to reason.

Wherefore the best time for exercise will be before meat (that the appetite may be increased by augmenting the naturall heat) all the excrements being evacuated, lest nature being hungry and empty, do draw and infuse the ill humors contained in the guts and other parts of the body, into the whole habit, the liver, and other noble parts. Neither is it fit presently, after meat, to run into exercise, lest the crude humors and meats not well concocted, be carried into the veins. The measure and bounds of exercise must be, when the body appears more full, the face looks red, sweat begins to break forth, we breath more strongly and quick, and begin to grow weary; if any continue exercise longer, stiffness and wearines assails his joints, and the body flowing with sweat suffers a loss of the spirituous and humid substance, which is not easily repaired; by which it becomes more cold, and lean even to deformity.

The quality of exercise.

The quality of exercise which we require, is in the midst of exercise, so that the exercise must be neither too slow and idle, neither too strong nor too weak, neither too hasty nor remiss, but which may move all the the members alike. Such exercise is very fit for sound bodies. But if they be distempered, that sort of exercise is to be made choice of, which by the quality of its excess, may correct the distemper of the body, and reduce it to a certain mediocrity. Wherefore such men as are stuffed with cold, gross, and viscous humors, shall hold that kind of exercise most fit for them, which is more laborious, vehement, strong, and longer continued. Yet so, that they do not enter into it before the first and second concoction, which they may know by the yellowness of their urine. But let such as abound with thin and cholerick humors, chuse gentle exercises, and such as are free from contention, not expecting the finishing of the second concoction, for the more acride heat of the solid parts delights in such half concocted juices, which otherwise it would so burn up, all the glutinous substance thereof being wasted, that they could not be adjoyned or fastened to the parts. For the repeating or renewing of exercise, the body should be so often exercised, as there is a desire to eat. For exercise stirs up and revives the heat which lies buried and hid in the body: for digestion cannot be well performed by a sluggish heat; neither have we any benefit by the meat we eat, unless we use exercise before.

For whom strong exercises are convenient.

* Anabrexmia.

The last part of exercise begun and performed according to reason, is named, * *The ordering of the body*, which is performed by an indifferent rubbing and drying of the members; that so the sweat breaking forth, the filth of the body, and such excrements lying under the skin, may be allured and drawn out; and also that the members may be freed from stiffness and wearines. At this time it is commonly used by such as play at Tennis.

What discommodities proceed from idleness.

But, as many and great commodities arise from exercise conveniently begun and performed, so great harm proceeds of idleness; for gross and vicious juices heaped up in the body commonly produce crudities, obstructions, stones both in the reins and bladder, the Gout, Apoplexie, and a thousand other diseases.

## CHAP. XVI.

### *Of Sleep and Watching.*

THat this our speech of Sleep and Watching, which we now intend, may be more plain, we will briefly declare, what commodity or discommodity they bring; what time and what hour is convenient for both; what the manner of lying must be, and the choice thereof; what the dreams in sleeping, and what pains or heavines and chearfulness after sleep may portend.

What sleep is.

Sleep is nothing else than the rest of the whole body, and the cessation of the Animall faculty from sense and motion. Sleep is caused, when the substance of the brain is possessed, and after some sort overcome and dulled by a certain vaporous, sweet and delightsome humidity; or when the spirits almost exhaust by performance of some labor, cannot any longer sustain the weight of the body, but cause rest by a necessary consequence, by which means nature may produce other from the meat by concoction turned into blood.

The use of sleep.

Sleep fitly taken much helps the digestion of the parts, because in the time of rest, the heat being the worker of all concoction, is carried back to them, together with the spirits

ſpirits. Neither doth ſleep only give eaſe to the wearied members, but alſo leſſens our cares, and makes us to forget our labors.

The night is a fit time to ſleep and to take our reſt in, as inviting ſleep by its moiſture, ſilence and darkneſs. For the heat and Spirits in the thick obſcurity of night, are driven in and retained in the center of the body; as on the contrary by the daily, and as it were, friendly and familiar light of the Sun, they are allured and drawn forth into the ſuperficies, and outward part of the body; from whence they leave ſleeping, and begin to wake. Beſides alſo, which makes not a little to that opportunity and benefit which we look for from ſleep, the night ſeaſon ſuffices for the work of juſt and perfect concoction. Which is one reaſon amongſt many that ſleep on the day time may be hurtfull. For we are wakened from our ſleep by the heat and ſpirits, called forth to the skin either by the light, or noiſe on the day time, before that the concoction which was begun be finiſhed. But that ſleep cannot but be light which comes without neceſſity of ſleeping. Wherefore the concoction being attempted, but not perfected, the ſtomach is filled with crudities, diſtended with acide or ſour belchings, and the brain troubled with groſs vapors and excrementitious humidities. From whence proceeds pain and heavineſs of the head, and ſtore of cold diſeaſes. But although ſleep on the night time be wholſome, yet it is fit, that it be reſtrained within the limits of an indifferent time. For that which exceeds, hinders the evacuation of excrements both upwards and downwards: but in the mean time the heat which is never idle, draws from them ſome portion or vapor into the veins, principall parts and habit of the body, to become matter for ſome diſeaſe. We muſt meaſure this time, not by the ſpace of hours, but by the finiſhing the work of concoction, which is performed in ſome ſooner than in other ſome. Yet that which is longeſt is perfected and done in ſeven or eight hours. The ventricle ſubſiding and falling into its ſelf and its proper coats, and the urine tinctured yellow, gives perfect judgment thereof. For on the contrary the extenſion of the ſtomach, acide belching, pain of the head, and heavineſs of the whole body, ſhew that the concoction is unperfect.

*Fit time for ſleep and the nature of the night.*

*Sleep on the day-time.*

*There ought to be a moderation of our nights ſleep.*

*How to be known.*

In ſleeping we muſt have ſpeciall care of our lying down; for firſt we muſt lye on our right ſide, that ſo the meat may fall into the bottom of our ſtomach, which being fleſhy, and leſs membranous, is the hotter, and more powerfull to aſſimilate. Then a little after we muſt turn upon our left ſide, that ſo the Liver with its Lobes, as with hands may on every ſide embrace the ventricle, and as fire put under a kettle, haſten the concoction. Laſtly, towards morning it will not be unprofitable to turn again upon our right ſide, that by this ſituation the mouth of the ſtomach being opened, the vapors which ariſe from the elixation of the *Chylus* may have freer paſſage. Lying upon the back is wholly to be avoided; for from hence the Reins are inflamed, the Stone is bred, Palſies, Convulſion, and all diſeaſes which have their originall from the defluxion into the ſpinall marrow, and to the Nerves taking beginning from thence. To lye upon the belly is not unprofitable for ſuch as have uſed to lye ſo, if they be not troubled with defluxions into the eys; for ſo the humor will more eaſily flow into the part affected. But thus the work of concoction is not a little furthered, becauſe by that form of lying, not only the inward heat is contained and gathered together about the ventricle, but the encompaſſing warmneſs of the ſoft feathers of the bed aids and aſſiſts it.

*What the form and fire of bed [illegible] in.*

*The harm of lying on our backs.*

*Upon our bellies.*

Neither are the Dreams which we have in our ſleep to be neglected, for by the diligent conſideration of theſe, the affections and ſuperfluous Humors which have chief power in the body are marvailouſly known. For thoſe who have raging choler running up and down their bodies while they ſleep, all things to them appear bright, ſhining, fiery, burning, full of noiſe and contention. Thoſe who abound with Phlegm, dream of floods, ſnows, ſhowers, and inundations and falling from high places. Thoſe who are Melancholy dream of gapings and gulfs in the earth, thick and obſcure darkneſs, ſmokes, caves, and all black and diſmall things. But thoſe whoſe bodies abound in blood, dream of marriages, dances, embracings of women, feaſts, jeſts, laughter, of orchards and gardens; and to conclude, of all things pleaſant and ſplendent.

*The conſideration of dreams.*

Alſo we muſt obſerve how the Patient doth after ſleep, whether more lively and chearfull, or more heavie: for by the opinion of *Hippocrates*,

*Cum labor à ſomno eſt, læthalem collige morbum:*
*Sin proſit ſomnus, nihil hinc læthale timendum eſt:* *Aphor. 1. ſect. 2.*

Pain ſleep enſuing, an ill diſeaſe doth ſhow:
But if ſleep profit bring, no harm from thence will flow.

And as ſleep, ſo watching, if it exceed meaſure, is hurtfull; for it hurts the temperature of the brain, weakens the ſenſes, waſtes the ſpirits, breeds crudities, heavineſs of the head, falling away of the fleſh, and leanneſs over all the body; and to conclude, it makes ulcers more dry, and ſo conſequently rebellious, difficult to heal and malign. There are many other things may be ſpoken of ſleep and watching, but theſe may ſuffice a Chirurgeon.

## CHAP. XVII.

### *Of Repletion, and Inanition, or Emptineſs.*

The kinds of Repletions, or rather of Exceſſes.

THere are, to be ſhort, two ſorts of Repletion, or of all exceſs; one is of a ſimple quality, without any defluxion, or ſociety of any humor, as appears in diſtempers without matter: the other is of quantity and maſs, the body being diſtended with too much meat, or too great quantity of humors; from whence proceed an infinite number of diſeaſes. They call the Repletion of meats, ſaticty or fulneſs; and it is of two kinds: The one which is called * Repletion or Fulneſs to the veſſels; the other * Repletion to the ſtrength.

*Repletio { ad vaſa / ad vires

We judg of ſatiety to the veſſels, by the diſtention and ſwelling of the veins and entrails, as the ſtomach. We call ſatiety to the ſtrength, when the body is loaded with more meats than it can well bear. But alſo there is a double Repletion of humors. For either it is of ſome one humor, or of all the humors; they call this by a peculiar name, *Plethora*.

*Gal. Meth.* 13. *cap.* 6. For *Galen* defines *Plethora* an equal exceſs of all the humors. For if at any time he define a *Plethora* to be an exceſs of blood only; then verily by the name of blood, he underſtands an equal comprehenſion of the four humors; as it is taught in Phyſick ſchools.

What *Cacochymia*.

The Repletion which is cauſed by ſome one humor, is termed by *Galen* in the place before mentioned, *Cacochymia*, (that is, An evil juice) whether the Repletion proceed of a Cholerick, Melancholick, Phlegmatick, or ſerous Humor.

The kinds of evacuation.

Now Inanition, or evacuation is no other thing than the expulſion or effuſion of humors which are troubleſome, either in quantity or quality. Of Evacuations, ſome are univerſall, which expell ſuperfluous humors from the whole body; ſuch are purging, vomiting, tranſpiration, ſweats, Phlebotomy. Some particular, which are performed only to evacuate ſome part, as the brain by the noſe, palat, eys, ears; the lungs by the weazon; the ſtomach by vomit and ſtool; the guts by ſtool; the liver and the ſpleen by urine and ordure. Theſe evacuations are ſometimes performed by nature, freeing it ſelf of that which is troubleſome to it; otherwhiles by the Art of the Phyſitian in imitation of nature.

And again, one of theſe is good and requiſite, when only the humor which is hurtfull either in quantity or quality, is evacuated; The other not requiſite, or immoderate, when the profitable Humors, together with the unprofitable, are expelled.

The commodities of moderate ſcratching.

But what evacuations ſoever theſe be, they are performed and done, either by the ſcratching and rubbing of the skin, as when a Cholerick, ſalt, or ſerous Humor, or ſome windineſs lying between the skin and the fleſh, cauſe itching. For by ſcratching the skin, it gets paſſage out, which is manifeſt by the efflux of a ſerous matter burning, or cauſing ſcabs and ulcers, if the humor be ſomewhat groſs, but inſenſible and not ſo manifeſt, if it be windineſs, the skin by that rubbing being rarified, and the groſs flatulency attenuated. Wherefore they do ill who hinder their Patients from ſcratching, unleſs they ſcratch ſo cruelly and hard, that there may be danger (by reaſon of the great heat and pain thereby cauſed) of ſome defluxion or falling down of humors into the part.

Or theſe evacuations are performed by much matter evacuated from an opened Bile, or running Ulcer, a Fiſtula, or ſuch like ſores. Or by ſweats which are very good and healthfull, eſpecially in ſharp diſeaſes, if they proceed from the whole body, and happen on the

The force of vomits.

criticall days. By vomit, which often violently draws theſe humors from the whole body, even from the utmoſt joints, which purging medicins could not evacuate, as we may ſee in the Palſie, and Sciatica, or Hip-gout. By ſpitting, as in all who are ſuppurated either in

Salivation.

the ſides or lungs. By Salivation, or a Phlegmatick flux by the mouth, as in thoſe who are troubled with the French-pox. By ſneezing and blowing the noſe; for by theſe, the brain oppreſt with moiſture, disburdeneth its ſelf, whether it be done without, or with the help of ſternutatories and errhines; wherefore children, and ſuch as have ſomewhat moiſt

The whole body is alſo purged by urine.

brains, purge themſelves often this way. By hicket and belching; for by theſe the windineſs contained in the ſtomach, is often expelled. By urine, for by this not only Feavers, but which is more to be admired, the French-pox hath often been terminated and cured.

For there have been ſome troubled with the Pox, in whom a flux of the vicious and venenate humor could not by Unctions of quickſilver be procured, either from the mouth or belly; yet have been wonderfully freed by abundance of urine, both from danger of death and their diſeaſe. By bleeding; for nature hath often found a way for grievous diſeaſes, eſpecially in young bodies, by bleeding at the noſe, and by their courſes in women. By a flux, or lask, purgation, ſweats; inſenſible evacuation and tranſpiration; for ſo tumors, the matter being brought to ſuppuration, do ſometimes vaniſh away and are diſſolved, both of their own accord, as alſo by diſſolving or diſcuſſing medicins. We do the ſame by exerciſe, diet, hot-houſes, long ſleep, waking, and ſhedding of tears. By ſucking, as with cupping-glaſſes, and horſ-leeches, in wounds made by venemous bitings.

In

In all ſuch kinds of evacuations, we muſt conſider three things, the quantity, quality, and manner of evacuation. As for an example, when an *Empyema* is opened, the matter which runs out, ought to be anſwerable in proportion to the purulent matter, which was contained in the capacity of the breaſts; otherwiſe, unleſs all the matter be emptied, there may happen a relapſe; the matter ſhould be white, ſoft, equal, and nothing ſtinking: Laſtly, you muſt let it forth not all together, and at one time, but by little and little, and at ſeverall times, otherwiſe not a little quantity of the Spirits and heat doth flow out together, with the unprofitable matter, and ſo conſequently a diſſolution of all the powers.

We muſt obſerve three things in every evacuation.

## CHAP. XVIII.

### *Of the Perturbations, or Paſſions of the minde.*

THe Perturbations are commonly called the Accidents of the minde, becauſe as bodily accidents from the body, ſo may theſe be preſent and abſent from the mind, without the corruption of the ſubject. The knowledg of theſe muſt not be lightly paſſed over by the Chirurgeon; for they ſtir up great troubles in the bodies, and yeeld occaſion of many and great diſeaſes; of which things, joy, hope, and love, may give an apparent teſtimony. For by theſe motions the heat and ſpirits are ſometimes gently, ſometimes violently diffuſed over all the body, for the enjoying of the preſent, or hoped for good. For then the heart is dilated, as to embrace the thing beloved, and the face is died with a roſie and lively colour. For it is likely, that the faculty it ſelf is ſtirred by the object, by whoſe power the heart it ſelf is moved.

Why the Paſſions of the minde are called Accidents. Their force.

For it is firſt neceſſary, before we be moved by any Paſſions, that the ſenſes in their proper ſeats, in which they are ſeldom deceived, apprehend the objects, and ſtraight, as meſſengers carry them to the common ſenſe, which ſends their conceived forms to all the faculties. And then, that each faculty, as a Judge may afreſh examin the whole matter, how it is, and conceive in the preſented objects ſome ſhew of good, or ill, to be deſired, or ſhunned. For what man that was well in his wits, did ever fall into a laughter, unleſs he formerly knew, or ſaw ſomewhat ſaid or done, which might yeeld occaſion of laughter? Therefore Joy proceeds from the heart, for the thing cauſing mirth or joy, being conceived, the faculty moves the heart, which ſhaken and moved by the faculty which hath dominion over it, is dilated and opened, as ready to embrace the exhilarating object. But in the mean time by the force of that dilatation, it ſends forth much heat, and ſpirits together with the bloud into all the body. A great part of which comming to the face, dilates it, the forehead is ſmooth and plain, the eies look bright, the cheeks become red, as died with Vermilion, the lips and mouth are drawn together, and made plain and ſmooth; ſome have their cheeks dented with two little pits (which from the effects are called laughing cheeks) becauſe of the contraction or curling, which the muſcles ſuffer by reaſon of their fulneſs of bloud and ſpirits, all which to be brief is nothing but to laugh.

From whence they have their force.

The reaſon of Joy.

Joy recreates and quickens all the faculties, ſtirs up the ſpirits, helps concoction, makes the body to be better liking, and fattens it, the heat, bloud, and ſpirits flowing thither, and the nouriſhing dew or moiſture, watering and refreſhing all the members; from whence it is, that of all the paſſions of the mind, this only is profitable, ſo that it exceed not meaſure; for immoderate and unaccuſtomed joy carries ſo violently the bloud and ſpirits from the heart, into the habit of the body, that ſodain and unlookt for death enſues, by a ſpeedy decay of the ſtrength, the laſting fountain of the vitall humour being exhauſted. Which thing principally happens to thoſe who are leſs hearty, as women and old men.

The effects of Joy.

Anger cauſeth the ſame effuſion of heat in us, but far ſpeedier than joy; therefore the ſpirits and humors are ſo enflamed by it, that it often cauſes putrid feavers, eſpecially if the body abound with any ill humour.

Anger.

Sorrow, or grief dries the body by a way quite contrary to that of anger, becauſe by this the heart is ſo ſtraitned, the heat being almoſt extinct, that the accuſtomed generation of ſpirits cannot be performed; and if any be generated, they cannot freely paſs into the members with the bloud; wherefore the vitall faculty is weakned, the lively colour of the face withers and decays, and the body waſtes away with a lingering conſumption.

Sorrow.

Fear in like ſort draws in and calls back the ſpirits, and not by little and little as in ſorrow, but ſodainly and violently; hereupon the face growes ſodainly pale, the extreme parts cold, all the body trembles or ſhakes, the belly in ſome is looſed, the voice as it were ſtays in the jawes, the heart beats with a violent pulſation, becauſe it is almoſt oppreſt by the heat, ſtrangled by the plenty of bloud, and ſpirits aboundantly ruſhing thither; The hair alſo ſtands upright, becauſe the heat and bloud are retired to the inner parts, and the utmoſt parts are more cold and drie than ſtone; by reaſon whereof the utmoſt skin and the pores, in which the roots of the hairs are faſtned, are drawn together.

Fear.

*Hippocr. lib. 4. de Morb.*

Shame.

Shame is a certain affection mixed, as it were, of Anger and Fear; therefore if, in that conflict of, as it were, contending passions, Fear prevail over Anger, the face waxeth pale, (the blood flying back to the heart;) and these or these Symptones rise, according to the vehemency of the contracted and abated heat. But if on the contrary, Anger get the dominion over Fear, the blood runs violently to the face, the eyes look red, and sometimes they even fome at the mouth.

Shamefastnes.

There is another kind of shame, which the *Latins* call *Verecundia* (we Shamefastnes) in which there is a certain flux, and reflux of the heat, and blood, first recoiling to the heart, then presently rebounding from thence again. But that motion is so gentle, that the heart thereby suffers no oppression, nor defect of spirits; wherefore no accidents worthy to be spoken of, arise from hence: this affect is familiar to young maids and boyes, who if they blush for a fault committed unawares, or through carelesnes, it is thought an argument of a vertuous and good disposition.

An agony.

But an agony, which is a mixt passion of a strong fear, and vehement anger, involves the heart in the danger of both motions; wherefore by this passion, the vitall faculties is brought into very great danger. To these six Passions of the mind, all other may be revoked, as Hatred and Discord, to Anger: Mirth and Boasting, to Joy; Terrors, Frights and Swoundings, to Fear; Envy, Despair and Mourning, to Sorrow.

By these it is evident, how much the passions of the mind can prevail, to alter and overthrow the state of the body; and that by no other means, than that by the compression and dilatation of the heart, they diffuse and contract the spirits blood, and heat; from whence happens the dissipation, or oppression of the spirits.

Why the first signs of passions of the mind appear in the face.

The signes of these Symptomes quickly shew themselves in the face; the heart, by reason of the thinnes of the skin in that part, as it were painting forth the notes of its affections. And certainly the face is a part so fit to disclose all the affections of the inward parts, that by it you may manifestly know an old man from a young, a woman from a man, a temperate person from an untemperate, an *Ethiopian* from an *Indian*, a *Frenchman* from a *Spaniard*, a sad man from a merry, a sound from a sick, a living from a dead. Wherefore many affirm that the manners, and those things which we keep secret and hid in our hearts, may be understood by the face and countenance.

The use of passions of the mind.

Now we have declared what commodity and discommodity may redound to the man from these forementioned passions, and have shewed that anger is profitable to none, unless by chance to some dull by reason of idlenes, or oppreft with some cold, clammy and phlegmatick humor; and fear convenient for none, unless peradventure for such as are brought into manifest and extream danger of their life by some extraordinary sweat, immoderate bleeding, or the like unbridled evacuation: Wherefore it behoves a wise Chirurgeon to have a care, lest he inconsiderately put any Patient committed to his charge into any of these passions, unless there be some necessity thereof, by reason of any of the forementioned occasions.

## CHAP. XIX.

### *Of things against Nature, and first of the Cause of a disease.*

What things against nature are.

HAving intreated of things naturall, and not naturall, now it remains we speak of things (which are called) against nature, because that they are such as are apt to weaken & corrupt the state of our body. And they be three in number; The cause of a disease, a Disease, and a Symptome. The cause of a disease is an affect against nature, which causes the disease. Which is divided into Internall and Externall. The External, originall or primitive comes from some other place, and outwardly into the body: such be meats of ill nourishment, and such weapons as hostilely wound the body.

What, and how many the causes of diseases be.

The primitive cause.

Internall antecedent.

The Internall have their essence and seat in the body, and are subdivided into antecedent and conjunct. That is called an antecedent cause, which as yet doth not actually make a disease, but goes near to cause one; so humors copiously flowing, or ready to flow into any part, are the antecedent causes of diseases; The conjunct is that which actually causes the disease, and is so immediately joyned in affinity to the disease, that the disease being present, it is present, and being absent, it is absent.

Internall conjunct.

Again, of all such causes, some are born together with us, as the over-great quantity and malign quality of both the seeds, and the menstruous blood from diseased Parents are causes of many diseases, and specially of those which are called Hereditary.

Other happen to us after we be born, by our diet and manner of life, a stroke, fall or such other like. Those which be bred with us, cannot be wholly avoided or amended, but some of the other may be avoided, as a stroke and fall; some not, as those which necessarily enter into our body, as Air, Meat, Drink, and the like.

The congenit, or inevitable cause of death.

But if any will reckon up amongst the internal, inherent, and inevitable causes, the dayly, nay hourely dissipation of the radicall moisture, which the naturall heat continually preys upon;

upon; I do not gainsay it, no more than that division of Causes celebrated and received of Philosophers, divided into Materiall, Formall, Efficient, and Finall; for such a curious contemplation belongs not to a Chirurgeon, whom I only intend plainly to instruct. Wherefore that we have written may suffice him.

## CHAP. XX.

### *Of a Disease.*

A Disease is an affect against Nature, principally, and by it self, hurting and depraving the action of the part in which it resides. The division of a Disease is threefold; Distemperature, ill Conformation, and the Solution of Continuity. What a disease is, and how various.

Distemperature is a Disease of the similar parts dissenting, and changed from their proper and native temper. That digression from the native temper, happens two ways; either by a simple distemperature from the excess of one quality; and this is fourfold, Hot, Cold, Moist, and Dry; or by a compound distemperature, by the excess of two qualities, which also is fourfold, Hot and Moist, Hot and Dry; Cold and Moist, Cold and Dry. Again, every distemper is the fault of one simple and single quality, as an inflammation; or hath some vicious humors joined with it, as a Phlegmon: Again, a Distemperature is either equal, as in a *Sphacele*; or unequal, as in a *Phlegmon*, beginning or increasing. A Distemperature.

Ill Conformity is a fault of the organicall parts, whose composure is thereby depraved. This hath four kinds; the first is, when the figure of the part is faulty, either by nature or accident, or some cavitie abolished; as if a part which nature would have hollow for some certain use, do grow or close up: Or lastly, if they be rough, or smooth otherwise than they should, as if that part which should be rough, be smooth, or the contrary. Another is in the magnitude of the part increased, or diminished contrary to nature. The third is in the number of the parts increased or diminished; as if a hand have but four or else six fingers. The fourth is in the site and mutuall connexion of the parts; as if the parts which should be naturally united and continued be pluckt asunder, as happens in Luxations; or the contrary. The third generall kind of disease, is the solution of continuity, a Disease common, both to the similar and organicall parts, acquiring diversity of names, according to the variety of the parts in which it resides. Ill Conformation. Solution of Continuity.

## CHAP. XXI.

### *Of a Symptome.*

WE do not in this place take the word Symptome in the most generall acceptation, for every change or accident which happens to man besides his own nature; but more reservedly and specially, only for that change which the disease brings, and which follows the disease, as a shadow doth the body. What a Symptome is.

There be three kindes of a Symptome properly taken. The first is, when the action is hurt; I say hurt, because it is either abolished, weakned, or depraved; so blindness is a deprivation or abolishing of the action of seeing; dulness of sight, is a diminution or weakning thereof; and a suffusion, such as happens at the beginning of a Cataract, when they think flies, hares, and such like bodies fly to and fro before their eys, is a depravation of the sight. Three kinds thereof.

The second is a simple affect of the body, and a full fault of the habit thereof being changed, happening by the mutation of some qualities: such is the changing of the native colour into a red by a Phlegmon, and into a livid and black by a Gangrene; such is the filthy stench the nose affected with a *Polypus* sends forth; the bitter taste, in such as have the Jaundise; and the rough and rugged skin in them which are Leprous.

The third is the fault of the overmuch retention of excrements which should be expelled, and expulsion of such as should be retained; for the evacuation of an humor profitable both in quantity and quality, is against nature, as bleeding in a body not full of ill Humors, nor Plethorick; and also the retention of things hurtfull in substance, quantity and quality, as the Courses in women, the urine, and the stone in the bladder.

## CHAP. XXII.

### *Of Indications.*

What Indication is.

THe knowledg and exerciſe of Indications befits that Chirurgeon, whom no blind raſhneſs of fortune, but reaſon; no chance, but counſell directs in the undertaking and performing the works of his Art. For an Indication is a certain ſafe and ſhort way, which leads the Phyſitian, as by the hand, to the attainment of his purpoſed end, of preſerving the ſound, or curing the ſick.

See *Method.* Cap. 7. *Lib. de opt. ſecta*, Cap. 11.

For *Galen* doth define an Indication to be a certain inſinuation of what is to be done, or a quick and judicious apprehenſion of that which may profit or hurt. And as Faulconers, Mariners, Plowmen, Souldiers, and all manner of Artizens, have their peculiar terms and words, which are neither known, nor uſed by the vulgar; ſo this word Indication is proper and peculiar to Phyſitians and Chirurgeons, as a Term of Art not vulgar; by conſideration of which, as by ſome ſign, or ſecret token, they are admoniſhed what is to to be done to reſtore health, or repell an imminent danger.

The kinds of Indications.

There are three prime and principall kinds of Indications, every of which is ſubdivided into many other. The firſt is from things naturall. The ſecond from thoſe things which are termed not naturall. The third from thoſe things which are contrary to nature. Things naturall ſhew they muſt be preſerved by their like, and in the compaſs of theſe are contained all the Indications which are drawn from the nature of the Patient, that is, from his ſtrength, temper, age, ſex, habit, cuſtome, diet.

Things not naturall may be doubted as uncertain, for one while they indicate the ſame things with things naturall, that is, they coindicate with the ſtrength, temper and the reſt; otherwhiles they conſent with things againſt nature, that is, they coindicate with the diſeaſe. Wherefore *Galen* when he ſaith, that Indications are drawn from three things; The diſeaſe, the nature of the Patient, and the encompaſſing air; by propoſing the familiar example of the air, he would have us to underſtand the other things not naturall; becauſe we may ſhun or imbrace them more or leſs as we will our ſelves, but we muſt, whether we will or no, endure the preſent ſtate of the air. Therefore the air indicates ſomething to us, or rather coindicates; for if it nouriſh the diſeaſe, as conſpiring with it, it will indicate the ſame that the diſeaſe, that is, that it muſt be preſerved in the ſame ſtate.

*Lib. 9. Method. cap. 9.*

Indications drawn from things naturall.

Things contrary to nature indicate they muſt be taken away by their contraries; therefore that we may more accurately and fully handle all the Indications drawn from things naturall, we muſt note, that ſome of theſe are concerning the ſtrength of the Patient, by care to preſerve which, we are often compelled for a time to forſake the cure of the proper diſeaſe: for ſo a great ſhaking happening at the beginning of an ague or feaver, we are often forced to give ſuſtenance to the Patient, to ſtrengthen the powers ſhaken by the vehemency of the ſhaking, which thing notwithſtanding lengthens both the generall and particular fits of the ague. Other pertain to the temper, other reſpect the habit, if the Patient be ſlender, if fat, if well fleſht, if of a rare, or denſe conſtitution of body. Other reſpect the condition of the part affected in ſubſtance, conſiſtence, ſoftneſs, hardneſs, quick or dull ſenſe, form, figure, magnitude, ſite, connexion, principality, ſervice, function and uſe. From all theſe, as from notes, the skilfull Chirurgeon will draw Indications according to the time and part affected: for the ſame things are not fit for ſore eyes, which were convenient for the ears, neither doth the phlegmon in the jaws and throat admit the ſame form of cure, as it doth in other parts of the body. For none can there outwardly apply repercuſſives, without preſent danger of ſuffocation. So there is no uſe of repercuſſives in defluxions of thoſe parts which in ſite are neer the principall. Neither muſt thou cure a wounded Nerve and Muſcle, after one manner. The temperature of a part, as Moiſture, alwayes indicates its preſervation, although the diſeaſe be moiſt, and give Indication of drying, as an ulcer. The principality of a part alwayes inſinuates an Indication of aſtringent things, although the diſeaſe require diſſolving, as an Obſtruction of the Liver; for otherwiſe unleſs you mix aſtringent things with diſſolving, you will ſo diſſolve the ſtrength of the part, that hereafter it cannot ſuffice for ſanguification. If the texture of a part be rare, it ſhews it is leſs apt, or prone to obſtruction; if denſe, it is more obnoxious to that diſeaſe, hence it is that the Liver is oftener obſtructed than the Spleen. If the part be ſituate more deep, or remote, it indicates the medicines muſt be more vigorous and liquid, that they may ſend their force ſo far. The ſenſibleneſs, or quick-ſenſe of the part, gives Indication of milder medicines, than peradventure the ſigns, or notes of a great diſeaſe require. For the Phyſitian which applies things equally ſharp to the Horny tunicle of the eye being ulcerated, and to the Leg, muſt need be counted either cruell, or ignorant. Each ſex and Age hath its Indications, for ſome diſeaſes are curable in youth, which we muſt not hope to cure in old age; for hoarſneſs and great diſtillations in very old men, admit no digeſtion, as *Hippocrates* ſaith.

What the conditions of the parts affected do indicate.

Indications from the ages.

*Aphor. 40. li. 2.*

*Nunquam*

*Nunquam decrepitus Branchum coquit, atque Coryzam.*
The feeble Sire, for age that hardly goes,
Ne're well digeſts the hurtfull Rheume or poſe.

Moreover according to his decree the diſeaſes of the Reins, and whatſoever pains moleſt the bladder, are difficultly healed in old men; and alſo reaſon perſwades that a Quartain admits no cure in Winter, and ſcarce a Quotidian; and ulcers in like manner are more hard to heal in Winter; that hence we may underſtand certain Indications to be drawn from time; and to increaſe the credit of the variety and certainty of Indications, ſome certaine time, and ſeaſons in thoſe times command us to make choiſe of medicines; for as *Hippocrates* teſtifies; *Aphor 6 ſect.6.* *Aphor.5 ſect.4.*

*Ad Canis ardorem facilis purgatio non eſt.*
In Dogdayes heat it is not good,
By purging for to cleanſe the blood.

Neither ſhalt thou ſo well preſcribe a ſlender diet in Winter, as in the Spring, for the air hath its Indications. For experience teaches us, that wounds of the head are far more difficultly and hardly cured, at *Rome*, *Naples*, and *Rochell* in *Xantoigne*. But the times of diſeaſes yeeld the principall Indications, for ſome Medicines are only to be uſed at the beginning and end of diſeaſes, others at the increaſe and vigour of the diſeaſe. Wee muſt not contemn thoſe Indications which are drawn from the vocation of life, and manner of Diet; for you muſt otherwiſe deal with the painfull Husbandman (when he is your Patient) which leads his life ſparingly and hardly, than with the Citizen who lives daintily and idlely. To this manner of life and Diet may be referred a certain ſecret and occult property, by which many are not only ready to vomit at eating of ſome meats, but tremble over all their bodies when they hear them but ſpoken of. I knew a prime Nobleman of the *French* Nobility, who was ſo perplext at the ſerving in of an Eel to the Table, at the midſt of dinner and amongſt his friends, that he fell into a ſwound, all his powers failing him. *Galen* in his book *de Conſuetudine* tells that *Arius* the *Peripatetick* died ſodainly, becauſe compelled by the advice of thoſe Phyſitians he uſed, he drank a great draught of cold water in the intolerable heat of a Feaver. For no reaſon, ſaith *Galen*, than that, becauſe he knowing he had naturally a cold ſtomach from his childhood, perpetually abſtained from cold water.

From our diet.

Hatred ariſing from ſecret properties.

For as much as belongs to Indications taken from things againſt nature; the length and depth of a wound or ulcer indicates one way; the figure cornered, round, equall and ſmooth, unequall and rough, with a hollowneſs ſtreight or winding, indicate otherwiſe; the ſite right, left, upper, lower in another manner, and otherwiſe the force and violence of antecedent and conjunct cauſes. For oftentimes the condition of the cauſe indicates contrary to the diſeaſe, as when abundance of cold and groſs humors cauſe and nouriſh a Feaver. So alſo a Symptome often indicates contrary to the diſeaſe, in which contradiction, that Indication muſt be moſt eſteemed, which doth moſt urge; as for example ſake, if ſwounding happen in a Feaver, the feaveriſh burning ſhall not hinder us from giving wine to the Patient.

Indications taken from things againſt nature.

Wherefore theſe Indications are the principalleſt and moſt noble which lead us, as by the hand, to doe theſe things which pertain to the cure, prevention and mitigating of diſeaſes. But if any object, that ſo curious a ſearch of ſo many Indications is to no purpoſe, becauſe there are many Chirurgeons, which ſetting only one before their eyes, which is drawn from the Eſſence of the diſeaſe, have the report and fame of skilfull Chirurgeons, in the opinion of the vulgar; But let him know that it doth not therefore follow, that this indication is ſufficient for the cure of all diſeaſes; for we do not alwayes follow that which the Eſſence of the diſeaſe doth indicate to be done. But chiefly then, where none of the forerecited Indications doth reſiſt or gainſay; you may underſtand this by the example of a *Plethora*, which by the Indication drawn from the Eſſence of the thing requires Phlebotomy; yet who is it, that will draw blood from a child of three months old? Beſides, ſuch an Indication is not artificiall but common to the Chirurgeon with the common people. For who is it that is ignorant, that contraries are the remedies of contraries? and that broken bones muſt be united by joyning them together? but how it muſt be performed and done, this is of Art and peculiar to a Chirurgeon, and not known to the vulgar. Which the Indications drawn from thoſe fountains we pointed at before, aboundantly teaches, which, as by certain limits of circumſtances, encompaſs the Indication which is taken from the Eſſence of the diſeaſe, leſt any ſhould think, we muſt truſt to that only. For there is ſome great and principall matter in it, but not all. For ſo the meaneſt of the common people is not ignorant, that the ſolution of continuity is to be cured by repairing that which is loſt. But in what parts we may hope for reſtitution of the loſt ſubſtance, and in which not, is the part of a skilfull Chirurgeon to know and pronounce. Wherefore he will not vainly beſtow his labour

We do not alwayes follow the Indication which is from the diſeaſe.

In what parts we cannot hope for reſtoring of ſolution of continuity

labor to cure the nervous part of the *Diaphragma*, or Midriffe being wounded, or the Heart, ſmall Guts, Lungs, Liver, Stomach, Brain or Bladder; and that I may ſpeak in a word, Empericks are not much more skilfull than the common people, although they do ſo much extoll themſelves above others by the name of experience. For although experience be another inſtrument to find out things with reaſon, yet without reaſon, it will never teach, what the ſubſtance of the part in which the diſeaſe lies, may be; or what the action, uſe, ſite, connexion, from whence ſpeciall and proper Indications are drawn; With which the Chirurgeon being provided and inſtructed ſhall not only know by what means to find out a remedy, but alſo, leſt he may ſeem to mock any with vain promiſes, he ſhall diſcern what diſeaſes are uncurable, and therefore not to be medled withall.

Experience without reaſon is like a blind man without a guide.

But implicit or intricate diſeaſes require each to be cured in their ſeverall order, except ſome one of them be deſperate, or ſo urge & preſs that the Phyſitian think it neceſſary after prepoſterous order, to begin with it, although often he be forced to make ſome one of theſe diſeaſes incurable, or give occaſion of cauſing ſome new one: into which ſtraits we are neceſſarily compelled to fall, when, (for example) we determine to pull, or take away ſome extraneous body; for the performance whereof we are compelled to inlarge the wound. So we are forced by neceſſity to open the neck of the bladder, (that ſo we may draw forth the ſtone therein contained) with a wound which often degenerates into an uncurable Fiſtula. For that diſeaſe which threatens danger of preſent death is of ſuch moment, that to ſhun that it may be counted a ſmall matter, and commodious for the ſick to bring in other diſeaſes, though uncurable. For if a convulſion happen by pricking a Nerve, which we cannot heal by any remedies, then by cutting the Nerve aſunder we end the convulſion, but deprive the part into which that Nerve did goe, of the uſe of ſome voluntary motion. So if in any great joynt there happen a Luxation with a wound, becauſe there is danger of convulſion by trying to reſtore and ſet right the luxated part, we are forc'd for ſhunning thereof, to attend the wound only, and in the mean time to let alone the Luxation. Otherwiſe in implicit diſeaſes if there be nothing which may urge, or call us from the ordinary cure, we muſt obſerve this order, that beginning with that affect, which hinders the cure of the principall diſeaſe, we proſecute the reſt in the ſame and their proper order, untill all the diſeaſes being overcome we ſhall reſtore the part affected to its integrity. Therefore let us take for an example, an ulcer in the Leg, a *Varix* (or big ſwollen vein) and a Phlegmonous tumor round about it; and laſtly, a body wholly plethorick and filled with ill humors; order and reaſon require this, that uſing the adviſe of ſome learned Phyſitian we preſcribe a convenient diet, and by what means we may, bring him to an equality by purging and blood-letting, and then we will ſcarifie in divers places the part where it is moſt ſwollen, then preſently apply Leeches, that ſo we may free it from the burden of the conjunct matter; then uſe Cauteries to help the corruption of the bone, and in the mean time change the circular figure of the ulcer into an ovall, or triangular; then at the length we will undertake the cutting of the *Varix*, and cure the ulcer which remains according to Art, and ſo at the length cicatrize it. In all this whole time the Patient ſhall neither walk, nor ſtand, nor ſit, but ly quietly, having his Leg orderly and decently rowled up. But if (as it often happens) the temper of the hurt part, be different from the temper of the whole body, the manner of curing muſt be ſo tempered, that we increaſe the doſis of hot or cold medicines, according to the ratable proportion of the indications requiring this or that, therefore imagine the part ulcerated to be ſuch, as that it is two degrees dryer than the juſt temper; but the whole body to exceed the ſame temper in one degree of humidity: reaſon and Art will require, that the medicin applyed to the ulcer be dryer by one degree than that which the part would otherwiſe require if it were temperate; but on the contrary let us ſuppoſe thus: the whole body to be one degree more moiſt then the temper requires, and the ulcerated part to be one degree dryer: truly in this caſe the medicine that is applyed to the ulcer by reaſon of the part it ſelf, ſhall not be increaſed in dryneſs, but wholly compoſed and tempered to the Indication of the ulcer, becauſe the force of the moiſture exceeding in the like degree, doth counterpoiſe the ſuperfluous degree of dryneſs. But it is more eaſie by an artificiall conjecture to determine of all ſuch things, than by any rules or precepts.

Indications in implicit diſeaſes.

An example of Indications in implicit diſeaſes.

What we muſt do when the temper of the part is different from the temper of the whole body.

An artificiall conjecture is of much force in Indications.

To theſe ſo many and various Indications, I think good to add two other; the one from ſimilitude; the other of a certain crafty deviſe, & as the latter Phyſitians term it, of a certain ſubtile ſtratagem. We draw Indication from ſimilitude, in diſeaſes which newly ſpring up and ariſe, as which cannot be cured by Indications drawn from their contraries, as long as their Eſſence is unknown and hid; wherefore they think it neceſſary to cure them by a way and Art like thoſe diſeaſes, with which they ſeem to have an agreeing ſimilitude of Symptomes and Accidents; Our Anceſtors did the ſame in curing the French Pocks, at the firſt beginning thereof, as long as they aſſimilated the cure to that of the Leproſie, by reaſon of that affinity, which both the diſeaſes ſeem to have. But we follow crafty devices and ſubtile counſels, when the Eſſence of the diſeaſe we meet, with is wholly ſecret and hid, either becauſe it is altogether of a hidden and ſecret nature, and which cannot be unfolded by manifeſt qualities, or elſe reſides in a ſubject which is not ſufficiently known to us, nor of a phyſicall contemplation, as the Mind. For then we being deſtitute of Indications taken

Indication from ſimilitude.

Indication of a ſubtile device.

from

from the nature of the thing, are compelled to turn our cogitations to impoſtures and crafty counſels; and they ſay this Art and Craft is of chief uſe in Melancholy affects and fictions, which are often more monſtrous and deformed than the *Chimera* ſo much mentioned in the fables of the Ancients; to which purpoſe, I will not think much to recite two Examples. A certain man troubled with a Melancholick diſeaſe, I know not by what errour of opinion, had ſtrongly perſwaded himſelf that he was without a head; the Phyſitians omitted nothing, by which they might hope to take this mad opinion out of his mind. But when they had in vain tryed all medicines, at length they deviſed this crafty, but profitable device, they faſtened and put upon his head a moſt heavy helmet, that ſo by the pain and trouble of his head nodding and drawn down by that weight, he might be admoniſhed of his error. Examples.

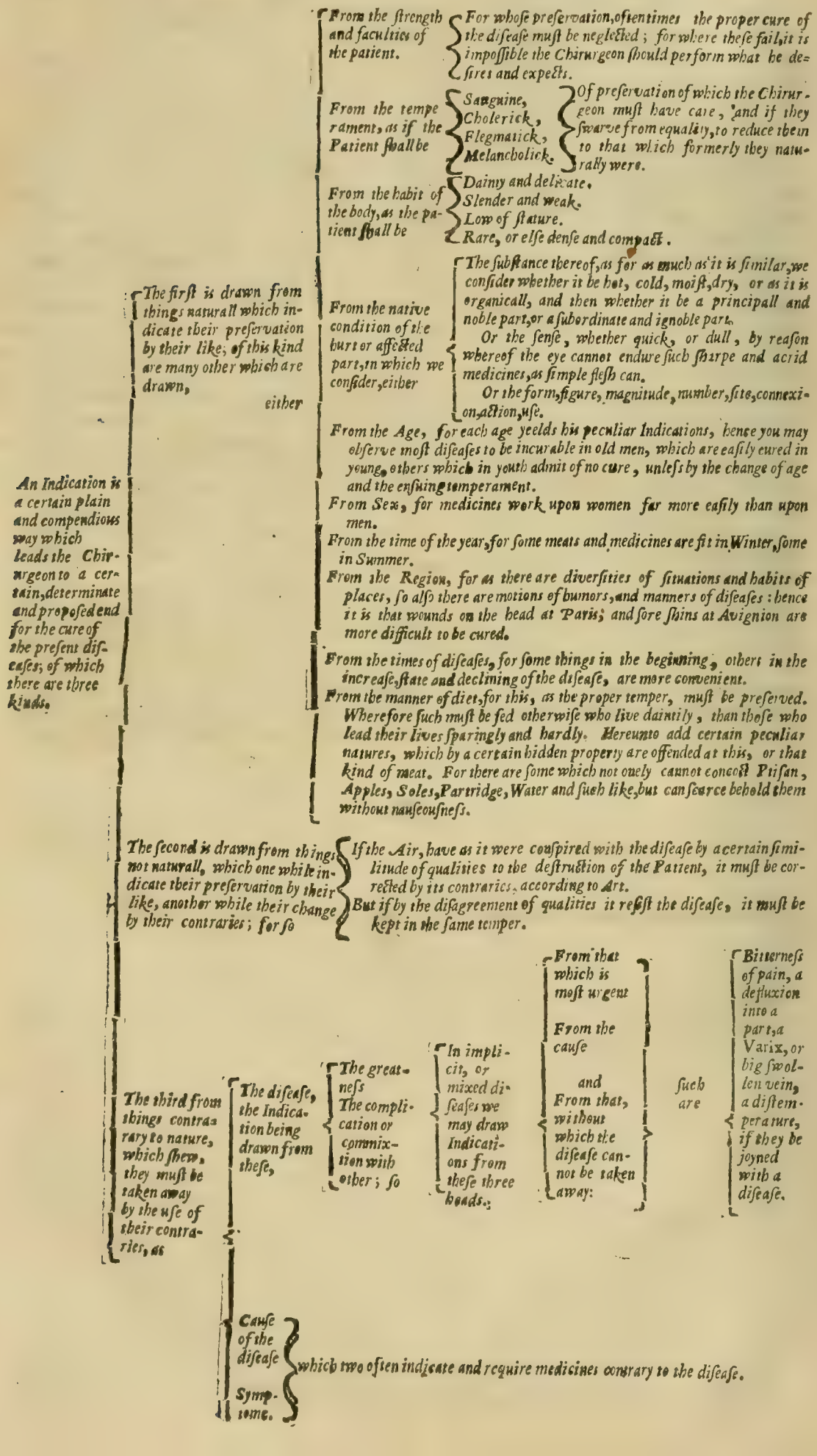
It is reported, another moleſted by the obſcurity and darkneſs of the ſame diſeaſe, did verily beleeve, that he had horns upon his head; neither could he be drawn or diverted from that abſurd and monſtrous opinion, untill that binding up his eyes, they miſerably bruiſed and ſcratched his forehead with the bony roughneſs of the lower parts of an oxes horns, that ſo he begun to believe by the painfull drawing of the blood that ran down his face, that thoſe bloody horns were forcibly plucked from him. Ingenious Chirurgeons in imitation of theſe examples may in like caſes do the like. For that caſe requires a man of a quick apprehenſion and advice, who may give manifeſt proof of his diligence and skill by medicinall ſtratagems, as who forthwith can politickly deviſe ſtratagems of divers ſorts. *A Phyſitian ſhould be of a quick apprehenſion.*

But, now coming to the end of this our tract of Indications, we muſt chiefly and principally obſerve; That of Indications ſome are Indicative; which abſolutely and of themſelves command this to be done; other conidicative, which indicate the ſame with the Indicative, and joyntly ſhew it to be done, but in ſome ſort ſecondarily and not primitively; ſome are repugnant, which of themſelves and their own nature perſwade quite contrary to that the indicative primitively did perſwade us; other correpugnant, which give their voice after the ſame form and manner with the repugnant againſt the indicative, as the coindicative conſent to and maintain them. Let this ſerve for an example of them all. *Indications indicative. Coindicative. Repugnant. Correpugnant.*

A *Plethora*, or plenitude of humors of its own nature, requires and indicates bloodletting, the Spring time perſwades and coIndicates the ſame, but to this counſell is quite oppoſite and repugnant, a weak faculty, and childhood is correpugnant.

Wherefore theſe four muſt be diligently weighed and conſidered when we deliberate what is to be done, and we muſt rather follow that which the indicative, or repugnant ſhew and declare, as what the diſeaſes and ſtrength of the Patient require, than that which the coindicative, or correpugnant ſhall perſwade, becauſe they have a weaker and but ſecundary power of indicating, and not eſſentiall & primitive. But becauſe the kinds of Indications are ſo many and divers, therefore that the knowledg of them may be more perſpicuous and leſs confuſed, I have thought good to deſcribe and diſtinguiſh them by this following ſcheme.

# A Table of Indications.



## CHAP. XXIII.

### *Of certain wonderfull and extravagant ways of curing Diſeaſes.*

AS monſters ſometimes happen in nature, ſo alſo in diſeaſes, and in the events and cures of diſeaſes. I underſtand by monſters certain marvailous ſucceſſes in diſeaſes, or certain ways of curing them, which ſwerve from Art, and happen beſides reaſon, nature, and common uſe. Monſtrous diſeaſes.

*Alexander ab Alexandro*, and *Peter Gilius* tell, that in *Apulia* a part of *Italy* they have a certain kind of Spider very frequent; the natives call it *Tarantula*, *Petrus Rhodius* cals it *Phalangium*; The Inhabitants find theſe Spiders in the firſt heat of Summer ſo venenate and deadly, that whomſoever they touch with their virulent biting, he preſently, without he have ſpeedy remedy, deprived of all ſenſe and motion fals down, or certainly if he eſcape the danger of death, he leads the remnant of his life in madneſs. Experience hath found a remedy by Muſick for this ſo ſpeedy and deadly a diſeaſe: Wherefore as ſoon as they can they fetch Fidlers and Pipers of divers kinds, who by playing and piping may make muſick; at the hearing whereof, he which was fallen down by reaſon of the venemous bite, riſes cheerfully, and dances ſo long to their meaſures and tunes, untill by the painfull and continued ſhaking and agitation of the whole body, all the malignity is diſſipated by tranſpiration and ſweats. The wonderfull force of the bite of a certain Spider. Muſick the remedy thereof.

*Alexander* adds, that it happened once in his ſight, that the Muſicians their wind and hands failing them ceaſed playing, and then the Dancer preſently fell down as if he had been dead; but by and by the Muſick beginning anew, he riſe up again and continued his dancing till the perfect diſſipation of the venome. And that it hath happened beſides, that one not ſo perfectly healed, certain reliques of the diſeaſe yet remaining, when a long time after he heard by chance a noiſe of Muſicians, he preſently fell a leaping and dancing, neither could he be made to leave before he was perfectly cured.

Some affirm according to the opinion of *Aſclepiades*, that ſuch as are frantick are much helped with a ſweet and muſicall harmony. *Theophraſtus* and *Aulus Gellius* ſay, that the pain of the Gout and Sciatica are taken away by Muſick. And the ſacred Scripture teſtifies, that *David* was wont by the ſweet ſound of the Harp to refreſh and eaſe king *Saul* when he was miſerably tormented by his evil ſpirit. *Herodotus* in *Clio* tels, that *Cræſus* the king of *Lydia* had a Son, which of a long time could not ſpeak, and when he came to mans eſtate was accounted dumb: but when an enemy with his drawn ſword invaded his father (overcome in a great fight, and the City being taken in which he was) not knowing that he was the King, the young man opened his mouth endevouring to cry out, and with that ſtriving and forcing of the Spirit, he broke the bonds and hinderances of his tongue, and ſpoke plainly and articulately, crying out to the enemy that he ſhould not kill King *Cræſus*. So both the enemy with-held his ſword, and the king had his life, and his ſon had his ſpeech always after. *Plutarch* in his book, Of the benefit to be received from our enemies, tels, That a *Theſſalian* called *Proteus*, had a certain inveterate and incurable Ulcer in a certain part of his body, which could not be healed, before he received a wound in a conflict in the ſame place, and by that means the cure being begun afreſh, the wound and ulcer were both healed. Muſick gives eaſe to pain. A ſtrong perturbation of the mind helps by moving the ſpirits.

*Quintus Fabius Maximus*, as *Livie* writes, was long and very ſick of a quartain Ague, neither could have wiſhed ſucceſs from medicins adminiſtred according to Art, untill skirmiſhing with the *Allobroges*, he ſhaked off his old feaveriſh heat, by a new heat and ardent deſire of fighting. It was credibly reported to me of late by a Gentleman of the Lord of *Lanſackes* Chamber, that there was a French Gentleman in *Polonia*, who was grievouſly tormented with a quartain Feaver, who on a time walking upon the bank of the river *Wixell*, to take away the irkſomneſs of his fit, was thruſt in jeſt into the River by a friend of his that met him by chance, by which (although he could ſwim, as he alſo knew that thruſt him in) he conceived ſo great fear, that the Quartain never troubled him after. King *Henry* the ſecond commanded me to go from the Camp at *Amiens* to the City *Dorlan*, that I might cure thoſe that were hurt in the conflict with the Spaniards, the Captain *S. Arbin*, although at that time he had a fit of a Quartain ague, yet would he be preſent at the ſight, in which being ſhot through the ſide of his neck with a Bullet, he was ſtrucken with ſuch a terror of death, that the heat of the Feaver was aſſwaged by the cold fear, and he afterwards lived freed from his Ague. Chance ſometimes exceeds Art.

*Franciſcus Valeriola* the famous Phyſitian of *Arles*, tels, That *John Berlam* his fellow Citizen troubled with a Palſey of one ſide of his body for many years, his houſe taking fire, and the flame coming near the bed in which he lay, he ſtrucken with a great fear, ſuddenly raiſed himſelf with all the force he had, and preſently recovering the ſtrength of his body, leaps out at the window from the top of the houſe, and was preſently *Obſerv. 4. lib. 2.*

cured of his diſeaſe, ſenſe and motion being reſtored to the part, ſo that afterward he went upright without any ſenſe of pain, who lay unmovable for many yeers before. He tells the like in the ſame place of his couſen *John Soliratius*; hee was a long time lame at *Avignion*, by reaſon that the Nerves of his hams were ſhrunk and drawn up, ſo that he could not go; being moved with a vehement and ſodain paſſion of anger againſt one of his ſervants whom hee endevoured to beat, he ſo ſtirred his body that forthwith the Nerves of his hams being diſtended and his knees made pliant he began to go and ſtand upright without any ſenſe of pain, when he had been crooked about the ſpace of ſix years before, and all his life after he remained ſound.

*Cap ult. lib. de curat per ſanguis miſs.*

*Galen* tels he was once fetched to ſtanch the bleeding, for one who had an Artery cut neer his Anckle, and that by his means he was cured without any danger of an *Aneurisma(i)* a relaxation of a veinous veſſell; and beſides by that accidentall wound he was freed from moſt grievous pain of his hip, with which he was tormented four yeers before: but although this eaſing of the pain of the Sciatica happened according to reaſon by the evacuation of the conjunct matter, by the artery of the anckle of the ſame ſide being opened; yet becauſe it was not cut for this purpoſe, but happened only by chance, I judged it was not much diſſenting from this argument.

*Galen* by a dream cures the *Sciatica.*

*Pliny* writes that there was one named *Phalereus*, which caſting up blood at his mouth, and at the length medicines nothing availing, being weary of his life, went unarmed in the front of the battell againſt the enemy, and there receiving a wound in his breaſt, ſhed a great quantity of blood, which gave an end to his ſpitting of blood, the wound being healed, and the vein which could not contain the blood being condenſate.

At *Paris*, *Anno* 1572. in *July*, a certain Gentleman being of a modeſt and curteous cariage fell into a continuall Feaver, and by that means became Frantick, moved with the violence of which he caſt himſelf headlong out of a window two ſtories high, and fell firſt upon the ſhoulder of *Vaterra* the Duke of *Alenzons* Phyſitian, and then upon the pavement; with which fall he cruelly bruiſed his ribs and hip, but was reſtored to his former judgment and reaſon. There were preſent with the Patient beſides *Valterra*, witneſſes of this accident theſe Phyſitians, *Alexis*, *Magnus*, *Duretus*, and *Martinus*. The ſame happened in the like diſeaſe, and by the like chance to a certain *Gaſcoyn* lying at the houſe of *Agrippa* in the Paved ſtreet.

*Othomannus* Doctor of Phyſick of *Mompelier* and the Kings Profeſſor, told me that a certain Carpenter at *Broquer* a village in *Switzerland*, being frantick caſt himſelf headlong out of an high window into a river, and being taken out of the water was preſently reſtored to his underſtanding.

The cauſe of the laſt recited cures.

But if we may convert caſualties into counſel and Art, I would not caſt the Patient headlong out of a window. But would rather caſt them ſodainly and thinking of no ſuch thing into a great ciſtern filled with cold water, with their heads foremoſt, neither would I take them out untill they had drunk a good quantity of water, that by that ſodain fall and ſtrong fear, the matter cauſing the Frenzy might be carryed from above downwards, from the noble parts to the ignoble; the poſſibility of which is manifeſt by the forecited examples, as alſo by the example of ſuch as bit by a mad Dog, fearing the water are often ducked into it to cure them.

## CHAP. XXIV.

### *Of certain juggling and deceitfull wayes of Curing.*

HEre I determine to treat of thoſe Impoſtors, who taking upon them the perſon of a Chirurgeon, do by any means either right or wrong, put themſelves upon the works of the Art; but they principally boaſt themſelves amongſt the ignorant common ſort, of ſetting bones which are out of joint and broken, affirming as falſly as impudently, that they have the knowledg of thoſe things from their Anceſtors; as by a certain hereditary right; which is a moſt ridiculous fiction; for our minds when we are born, is as a ſmooth table, upon which nothing is painted. Otherwiſe what need we take ſuch labour and pains to acquire and exerciſe ſciences? God hath endued all brute beaſts with an inbred knowledg of certain things neceſſary for to preſerve their life, more than man.

Sciences are not hereditary.

But on the contrary he hath enriched him with a wit furniſhed with incredible celerity and judgment, by whoſe diligent and laborious agitation he ſubjects all things to his knowledg. For it is no more likely, that any man ſhould have skill in Chirurgery becauſe his father was a Chirurgeon, than that one who never endured ſweat, duſt nor Sun in the field, ſhould know how to ride and govern a great horſe, and know how to carry

carry away the credit in tilting, only becauſe he was begot by a Gentleman and one famous in the Art of War.

There is another ſort of Impoſtors far more pernicious and leſs ſufferable, boldly and inſolently promiſing to reſtore to their proper unity and ſeat, bones which are broken and out of joint, by the only murmuring of ſome conceited charms, ſo that they may but have the Patients name and his girdle. In which thing I cannot ſufficiently admire the idleneſs of our Country-men ſo eaſily crediting ſo great and pernicious an error; not obſerving the inviolable law of the ancient Phyſitians, and principally of Divine *Hippocrates*, by which it is determined, that three things are neceſſary to the ſetting of bones diſlocated and out of joynt; to draw the bones aſunder; to hold the bone receiving, firmly immoveable with a ſtrong and ſteddy hand; to put the bone to be received into the cavity of the receiving. For which purpoſe the diligence of the Ancients hath invented ſo many engines, Gloſſocomies and Bands, leſt that the hand ſhould not be ſufficient for that laborious work. What therefore is the madneſs of ſuch Impoſtors to undertake to do that by words, which can ſcarce be done by the ſtrong hands of ſo many Servants, and by many artificiall engines?

A moſt impudent ſort of Impoſtors.

Three things neceſſary for the cure of a Luxation.

Of late years another kind of Impoſture hath ſprung up in *Germany*, they beat into fine powder a ſtone which in their mother tongue they call *Bembruch*, and give it in drink to any who have a bone broken, or diſlocated, and affirm that it is ſufficient to cure them. Through the ſame *Germany* there wander other Impoſtors who bid to bring to them the Weapons with which any is hurt; they lay up in a ſecret place and free from noiſe, and put and apply medicines to it, as if they had the patient to dreſs, and in the mean time they ſuffer him to go about his buſineſs, and impudently affirm that the wound heals by little and little by reaſon of the medicine applyed to the weapon.

But it is not likely that a thing inanimate which is deſtitute of all manner of ſenſe, ſhould feel the effect of any medicine; and leſs probable by much, that the wounded party ſhould receive any benefit from thence. Neither if any ſhould let me ſee the truth of ſuch juggling by the events themſelves and my own eyes, would I therefore beleeve that it were done naturally and by reaſon, but rather by charms and Magick.

In the laſt aſſault of the Caſtle of *Hiſdin* the Lord of *Martigues* the elder was ſhot through the breaſt with a Musket bullet. I had him in cure together with the Phyſitians, and Chirurgeons of the Emperour *Charles* the fift and *Emanuel Philibert* the Duke of Savoy, who becauſe he entirely loved the wounded priſoner, cauſed an aſſembly of Phyſitians and Chirurgeons to conſult of the beſt means for his cure. They all were of one opinion, that the wound was deadly and incurable, becauſe it paſſed through the midſt of his lungs, and beſides had caſt forth a great quantity of knotted blood into the hollowneſs of his breſt.

There was found at that time a certain *Spaniard*, a notable Knave, and one of thoſe Impoſtors, who would pawn his life, that he would make him ſound; wherefore this Honorable Perſonage being in this deſperate caſe was committed unto his care. Firſt of all hee bid they ſhould give him the Patients ſhirt, which he tore into ſhreds and peeces, which preſently framing into a Croſs, he laid upon the wounds whiſpering ſome conceived or coined words, with a low murmure. For all other things he wiſhed the Patient to reſt content, and to uſe what diet he pleaſed, for he would do that for him, which truly he did. For he eat nothing but a few prunes, and drunk nothing but ſmall beer, yet for all this the wounded Prince died within two days; the *Spaniard* ſlipt away, and ſo ſcaped hanging. And whileſt I opened the body in the ſight of the Phyſitians and Chirurgeons to embalm him, the ſigns and accidents of the wound did evidently and plainly appear to be as we had pronounced before.

And there be alſo other Jugling companions of this tribe, who promiſe to cure all wounds with lint, or Tents, either dry, or macerated in oyl or water, and bound to the wound, having murmured over ſome charm or other, who have had ſometimes good ſucceſs, as I can witneſs. But the wounds upon which tryall was made were ſimple ones, which only required union, or cloſing for to perfect the cure. So verily the bones of beaſts when they be broke, grow together by the only benefit of nature. But when the affect ſhal be compound by diverſity of Symptomes, as a wound with an ulcer, inflammation, contuſion and fracture of a bone, you muſt hope for no other from Tents or Lints, nor charms than death. Therefore the common ſort who commit themſelves to theſe Impoſtors to be cured do not only injure themſelves, but alſo hurt the Common-wealth, and the common profit of the Citizens; for whoſe good and juſtice ſake a prudent Magiſtrate ought to deprive Impoſtors of all freedome in a free and Chriſtian common-weal.

What wounds may be cured only by lint, or by tents and Water.

Witches, Conjurers, Diviners, Soothſayers, Magicians, and ſuch like, boaſt of curing many diſeaſes; but if they do or perform any thing in this kind, they do it all by ſleights, ſubtilties and forbidden Arts, as Charms, Conjurations, Witcheries, Characters, Knots, Magicall Ligatures, Rings, Images, Poyſons, laces tyed acroſs, and other damnable tricks, with which they pollute, pervert and defame the prime and ſacred Art of

Phyſick, and that with the danger of mens lives. Who certainly are to be baniſhed by the laws of our Countrey, eſpecially ſeeing it is decreed in *Moſes* law, *Let none be found among you that uſeth witchcraft*, or a regarder of times, or a marker of the flying of Fowls, or a Sorcerer, or a Charmer, or that counſelleth with Spirits, or a Soothſayer, or that asketh counſell at the dead; for all that do ſuch things, are abomination to the Lord, and becauſe of theſe abominations the Lord thy God doth caſt them out before thee. But the Miracles of our Lord Jeſus Chriſt the Son of God, and of his Saints and Apoſtles in curing diſeaſes beyond nature and all Art, are of another kind, which we ought to beleeve ſo firmly and conſtantly, that it ſhould be counted an impiety for a Chriſtian to doubt of them. All holy Writings are full of theſe; as to give ſight to the blinde, hearing to the deaf, power to go to thoſe ſick of the Palſie, to drive forth Devils, to cure the Leproſie, to give fruitfulneſs to women, to raiſe the Dead, and perform by the holy Ghoſt other Miracles which exceed the condition and law of Nature; whom here we earneſtly intreat to free and protect us from unclean Devils, and the ſpirits of diabolicall deceit, and to give us the mind that we may will and be able always to aſpire to Heaven, and faſten the hope, ſafety, and anchor of all our fortunes in God alone. *Amen.*

Deut. 18.

## *The End of the firſt Book.*

# The ſecond Book, OF LIVING CREATVRES, And of the Excellency of MAN.

BEfore I come to ſpeak of the Anatomy of Mans body, I have thought fit to ſay a little of the nature of brute Beaſts. There is between Beaſts a great deal of difference by nature; for of theſe, ſome are hardy and bold, others fearfull; ſome wilde and ſavage, others tame; ſome walking in herds, others wandring alone; ſome covered and defended with ſhels and ſcales, as the Crocodile, the Tortois, and many kinds of fiſh; others have ſtings and prickles. The difference of brute beaſts.

The Horſe hath his hard and ſtrong hoofs, his creſt (as being a generous beaſt) beſet with a thick and harſh mane. The defence of the magnanimous Lion, are his teeth, his crooked paws and tail. Buls are formidable by their horns. The Boar by his tusks ſtanding out, as it were naturall hunting ſpears. The Hare being a timerous creature, is naked and unarmed; but in recompence thereof Nature hath made her nimble and ſwift of foot. For what the more noble and courageous beaſts have in arms, is ſupplyed in the fearfull by nimbleneſs and celerity. Infinite are the other endowments of brute beaſts, and ſuch as can hardly he imagined or deſcribed. For if we diligently ſearch into their nature, we ſhall obſerve the impreſſions and ſhadows of many vertues, as of magnanimity, prudence, fortitude, clemency, and docility: for they entirely love one another, follow thoſe things that are good, ſhun thoſe that are hurtfull, and gather and lay up in ſtore thoſe things that are neceſſary for life and food. Laſtly, they give undoubted preſages of the weather and air. They have taught men many things, and are of a moſt exquiſit and quick ſenſe; of rare art in vocall muſick, prudent and carefull for their young, and faithfull lovers of their native ſoil. They are religiouſly obſervant of the rights of friendſhip and chaſtity. They have their weapons whereby they are prepared, both to invade, and to defend themſelves being invaded. They ſubmit themſelves to the diſcipline of man, practiſe and imitate his ſpeech, and mutually prattle and chant one to another. They have a kind of weal-publick amongſt themſelves, and know how to preſerve their preſent welfare, and to depell the contrary, being in this their own counſellors, and not tutored by man. Yea, man is beholden to them for the knowledg of many wholſome things. The conſideration of which bred ſo great a doubt amongſt the ancient Philoſophers, that it was a queſtion amongſt them, whether beaſts had uſe of reaſon, or no? Therefore alſo the wiſe *Solomon* ſends us for examples of parſimony and diligence unto the Ant or Piſmire; and *Eſaias* in exprobration of the people of Iſrael for their ingratitude and rebellion againſt God, ſends them to the Ox and Aſs; for they do not only know, but reverence their maſters. Some ſhadow of vertue in beaſts.

But from whence is the knowledg of theſe Medicins, wherewith the Art of Phyſick is ſo richly adorned, but from brute beaſts, as *Pliny* affirmeth? The infallible vertue of the herb *Dictamus*, in drawing darts out of the fleſh, was taught us by the Hart, who wounded with the Huntſmans darts or arrows, by means hereof draws out the weapons which remain ſticking in her. Which is likewiſe practiſed by the Goats of *Candie*, as *Ariſtotle* writeth. The wonderfull effect which *Celandine* hath upon the ſight, was learnt by the practiſe of Swallows, who have been obſerved with it to have beſmeared, and ſo ſtrengthened the eys of their young. Serpents rub their ey-lids with fennell, and are thought by that means to quicken and reſtore the decaying ſight of their eys. The Tortois doth defend and ſtrengthen her ſelf againſt the biting of Vipers, by eating of ſavorie. Bears by eating of Piſmires, expell that poiſon that they have contracted by their uſe of Mandrakes. *Lib. 8. cap. 27.*

Mandrakes. And for correction of that drouzineſs and ſloth which growes upon them by their long ſleep in their dens, they eat the hearb of *Aron* (i.) Cuckopint. But the Art they uſe in the enticing and catching of Piſmires is very pretty, they go ſoftly to the holes or hils of the Piſmires, and there lay themſelves all their length upon the ground, as if they were dead, hanging out their tongue wet with their foam, which they draw not again into their mouth, before they feel them full of Piſmires, which are enticed by the ſweetneſs of the foam: And having taken this as a purging medicine, they expell by the guts, thoſe ill humors wherewith they were offended. We ſee that Dogs give themſelves a vomit, by eating a kind of graſs, which is from thence called Dog-graſs. Swine, when they find themſelves ſick, will hunt after ſmalt, or river lobſters. Stockdoves, Blackbirds, and Partridges, purge themſelves by Bay leaves. Pigeons, Turtles, and all ſort of Pullen, disburden themſelves of groſs humors, by taking of Pellitory of the wall. The bird Ibis (being not much unlike the Stork) taught us the uſe of Clyſters. For when he finds himſelf oppreſſed with a burden of hurtfull humors, he fills his bill with ſaltwater, and ſo purgeth himſelf by that part, by which the belly is beſt diſcharged. The invention of the way of removing the Cataract of the eye, we muſt yeeld unto the Goat, who by ſtriking by chance againſt the thorny buſhes, pulls off the Cataract which hinders the ſight, and covers the ball of the eye, and ſo recovers his ſight. The benefit of Phlebotomie, we owe unto the Hippotamus or River-horſe, being a kind of horſe, and the Inhabitant of the River *Nilus*; who being a great devourer, when he finds himſelf ſurcharged with a great deal of blood, doth by rubbing his thigh againſt the ſharp ſands on the bankſide, open a vein, whereby the ſuperfluous blood is diſcharged, which he ſtoppeth likewiſe when it is fit, by rowling himſelf in the thick mud. The Tortois having chanced to eat any of the fleſh of a Serpent, doth make origanum and marjoram her Antidote. The Ancients found help from brute beaſts, even againſt the dreadfull and non-ſparing force of lightning; for they were of opinion that the wings of an Eagle were never ſtruck with lightning, and therefore they put about their heads little wreaths of theſe feathers. They were perſwaded the ſame thing of the Seal, or Sea-calf, and therefore were wont to encompaſs their bodies with his skin, as a moſt certain ſafeguard againſt lightening. It were a thing too long, and laborious, to ſpeak of all thoſe other muniments of life and health (obſerved here and there by *Ariſtotle* and *Plinie*) which we have learnt of brute beaſts. I will therefore end this Chapter, after that I have firſt added this; That we are beholding to beaſts not only for the skill of curing diſeaſes, and of preſervation of health, but for our food, our rayment, and the ornament and beautifying the bodies.

The craftineſs of Bears.

The bird Ibis the firſt inventer, or ſhewer of Clyſters.

The invention of removing a Cataract.

The invention of Phlebotomy.

A preſervative againſt thunder.

*Of the Faculty of brute Beaſts in preſaging.*

THe firſt knowledg and skill of Prognoſtication, and obſervation of weather by the Air, was firſt delivered unto us from beaſts of the land and water, and from fowl. For we ſee in dayly obſervation, that it is a ſign of change of weather, when Lambs and Rams do butt at one another with their horns, and playing wantonly do kick, and keep up their heels. The ſame is thought to be preſaged when the Oxe licks himſelf againſt the hair, and on the ſodain fils the Air with his lowing, and ſmels to the ground, and when he feeds more greedily than he uſed to do. But if the Piſmires in great multitudes fetch their prey ſo haſtily, that they run and tumble one upon another in their narrow paths, it is thought a ſign of rain; As is alſo the buſie working of Moals, and the Cats rubbing and ſtroaking of her head and neck, and above her ears, with the bottome of her feet. Alſo when Fiſhes play and leap a little above the water, it is taken for a ſign of rain. But if the Dolphins do the ſame in the ſea, and in great companies, it is thought to preſage a ſodain ſtorm and tempeſt. Whereby the Mariners forewarned, uſe all care poſſible for the ſafety of themſelves and their ſhips, and if they can caſt Anchor. And it is ſufficiently known what the louder croaking of Frogs than ordinary portends.

What the butting of Rams ſignifies.

Preſages of rain.

The ſign at ſea of a ſtorm at hand.

But the facultie of birds in this kind of preſaging is wonderfull. If Cranes flie through the air without noiſe, it is a ſign of fair weather, and of the contrary, if they make a great noiſe and flie ſtragglingly. As alſo if Sea fowl flie far from the Sea, and light on the land. The cry or ſcrieching of Owls portends a change of the preſent weather, whether foul or fair. *Plutarch* ſaith, that the loud cawing of the Crow betokens winds and ſhowers, as alſo when he flaps his ſide with his wings. Geeſe and Ducks, when they dive much, and order, and prune, and pick their feathers with their beaks, and cry to one another, foretell rain; and in like manner Swallows, when they flie ſo low about the water, that they wet themſelves, and their Wings. And the Wren, when he is obſerved to ſing more ſweetly than uſuall, and to hop up and down. And the Cock when he chants, or rather crows preſently after the ſetting of the Sun. And Gnats, and fleas, when they bite more than ordinary. If the Hern ſoar aloft into the air, it betokeneth fair weather, if on the contrary he flie cloſe by the watter, rain. If Pigeons come late home to the Dove-houſe, it is a ſign of rain. If Bats flie in the evening, they foreſhew wet weather. And laſtly the Crocodile layes her egs in that place, which muſt be the bounds of the overflowing of the River *Nilus*; And therefore he that firſt meets with

The Crocodile by laying her egs, ſhews the bounds of the increaſe of the River *Nilus*.

with theſe eggs, tels the reſt of the Countrey people, and ſhews them how high the flood will riſe, and what inundation it will make upon their grounds: A thing moſt worthy of admiration, that in this monſter there ſhould be that ſtrong faculty of preſaging.

*Of the induſtry of Fiſhes.*

MAny ſea-Fiſhes, when they feel a tempeſt coming, do gravell or balaſt themſelves, to the end they may not be toſſed up and down at the pleaſure of the waves. Others when the fury of the ſea is at the height, hide themſelves in the holes of rocks. But in that they ſwim againſt the ſtream, they do it for this cauſe and reaſon, that the force of the ſtream and the flood may not take from them, and ſtrike off their ſcales, and that their gills may not fill with water which would hinder their ſwimming, and intercept their reſpiration. As by the ſame advice Cranes fly againſt the wind; whereas if they ſhould fly down the wind, their feathers would be diſplaced and broken, and they would not be able to fly.

How Fiſhes provide for their ſafety againſt a ſtorm.

How they ſwim againſt the ſtream.

*Of the induſtry of Birds in the building of their Neſts.*

THe induſtry of Birds in the building of their neſts is ſuch, that it doth far exceed the art and skill of all Maſons and Architects. From whence it is become a Proverb, *That men know, and can do all things but make Birds-neſts.* They are built within with wooll and feathers, and ſuch kind of ſoft things, which are as a kind of a pallet for the young ones. Swallows build their neſts in a round form, that they may be the more firm, and leſs ſubject to be hurt by any thing that ſhall ſtrike againſt them, and likewiſe more capacious. They chooſe their matter out of dirt and chaff, (interlacing it with many ſtraws) as it were their plaſter or lime. Thoſe that build in trees, do make choice of the ſoundeſt boughs, as if they meant to have them as a ſure foundation for the building which they ſhould erect thereon. The Cock and the Hen do by turns ſit over their eggs, and likewiſe fetch their meat, interchanging each others labor; neither do they ever forſake their young, before they are able to get their own living. I had at my houſe a great number of Sparrows neſts in earthen pots; and when the young ones begun to wax pretty big, and to be covered with feathers, I made the whole neſt be taken down and ſet upon the ground, that I and my friends might delight our ſelves in beholding the care of the old ones in the feeding of their young; for they feed them every one in order, skipping none, neither will they (to the wrong of the reſt) give one two parts, although he gape, and be importunate for it; dividing moſt juſtly to every one his own ſhare, according to the exact rule of diſtribution. And oftentimes for experiment, I would make triall with a ſtrange Sparrow of the ſame age, laid near, or put among the reſt of the young ones, whether the old ones would feed the ſtranger, as if it were legitimate. But this as a ſtranger and a baſtard they would ſuffer to ſtarve, skipping it when it gaped after the meat. And in like manner Lambs and young Kidds do in the fields, in the midſt of a great flock, run every one to his own dam; who being moſt certainly able to diſtinguiſh between the legitimate and a baſtard, will not ſuffer her ſelf to be ſuckt but by her own young.

Of what things birds build their neſts.

In what ſhape.

With what care Sparrows feed their young.

*Of the induſtry of Spiders.*

THe Spider ſpins her web with wonderfull artifice, hanging and faſtening it to every tack or ſtay that is nigh, drawing of his thread, and running upwards and downwards, and every way. And although the diligence of the chamber-maid beats down and mars this pendulous and new-begun work, yet her ſeat and her hold, the Spider keeps ſtill, neither is ſhe, or will ſhe deſiſt from the work ſhe hath begun, but in a very ſhort time weaves a great deal more unto the ruins of her former work, than can be unweaved again with much labor. So that from hence all cloth and linnen Weavers, all Embroiderers and workers with the needle (you will eaſily think) have learnt their Arts, if either you obſerve the exactneſs of the weaving, the fineneſs of the thred, or the continuation and indiſſoluble knitting together of the whole web; for being abrupt, and troubled with no ends of threds at all, it reſembles a thin membrane, anointed with a kind of glew, wherewith, when the prey is entangled, the Spider runs preſently in, and, as it were, draws her nets, and infolds, and takes the captive after the manner of huntſmen. If this were not daily ſeen with our eys, it would be thought fabulous.

How the Spiders weave.

How they catch their prey.

*Of Bees.*

I Cannot paſs in ſilence the great induſtry of Bees: For having eſtabliſhed a kind of Weal-publick, they make election of a King, who is ſuch a one, as in procerity of body, and excellency of feature exceedeth all the reſt. He is remarkable by his ſhort wings, his ſtreight legs, his grave gate; and in ſtead of a Diadem or regall Crown, either he hath no ſting, or elſe doth not uſe it, which is the Artillery of the reſt. He never goeth unattended out of the hive, but always invironed with a Princely retinue, the reſt of his train following after neither goes he at any time abroad, but upon urgent affairs which concerns

Bees chooſe themſelves a King.

concerns the whole ſtate. His progreſs is forewarned by the voice and ſound of trumpets, and as it were with ſinging, and they all draw nigh. Every one gets as near to his perſon as he can, and when he is weary with flying, they all bear him up with their own bodies.

Their pitching their tents.

On what place ſoever he alighteth, there they forthwith pitch their tents. If he chance to die, they go not abroad to feed, but ſtand all mourning round about the corpſe; then carry him out of the hive, and (as it were) follow his hearſe and bury him: and laſtly, having with ſolemnity performed all the ſeverall rites and obſequies, they chooſe themſelves another King, for without a King they cannot live. He then taketh care of all things, having his ey every where, whilſt that the reſt intend the performance of the work. And ſuperviſing all, giveth them encouragement, and chaſtiſeth negligence. For their time of going forth for food, they chooſe a clear and fair day; for they have a naturall faculty of preſaging of the weather. They are ſuch obſervers of juſtice and equity, that never, either with their ſting, or by any other way, do they moleſt any creature, neither do they exerciſe and prepare their ſpears againſt any, but for the ſafegard of themſelves and their hives.

Their obſequies for their dead King.

Their juſtice.

### *Of the care of Bees.*

THey manage and order their affairs in this manner; in the day-time they appoint before their gates a ſtation of watchmen and guarders. In the night they reſt from their labors, ſo long, till that one (who is appointed to this charge) by one or two humms, as by a ſound of a Trumpet, rowſeth all the reſt. Then come they together to obſerve what is the ſtate of the weather, which if they foreſee will be fair, then abroad go they into the fields and paſtures. Some therefore bring into the hive little faſcicles of flowers on their thighs; others water in their mouth, and others a dewie moiſture gathered on their bodies. Theſe are met by others, who receive their burdens, which they diſpoſe in their due and proper places. Thoſe that are ſent out into the fields for food, are the youngeſt and the ſmalleſt; And therefore if the wind chance to riſe any thing high, they expect untill it ceaſe, and that the force and violence thereof be over. But if it continue violent, then do they ballaſt themſelves with a little ſtone flying cloſe by the ground, to prevent their being driven to and fro by the force of the wind. They are exceeding diligent in all their buſineſs, and do puniſh the ſloth of the lazie oftentimes with death. Some of them are the builders, others poliſh the building, and the reſt bring in their materials.

Their watch.

Their divers employments.

The building in their arched hives is with wonderfull artifice, being made with two doors, one to come in, and the other to go out at. They have all things alike, leſt that the inequality, either of their food or labor, ſhould give occaſion of diſſention. Their care is, that their houſes may ſhew both ſtate and handſomneſs. Idle drones, born for nothing but to eat, and conſume the fruits of their labors, they chaſe from their hives. Thoſe that chance to loſe their ſtings, are utterly diſabled, and in a ſhort time their guts come out that way, and they die. They bring to their owners wonderfull increaſe of wax and honey.

They puniſh ſloth with baniſhment.

*Ariſtomachus* a diligent obſerver of Bees.

*Ariſtomachus* the Philoſopher doth boaſt, that for fifty eight years together, he had with great care been a nouriſher of Bees, only that he might the better attain to the knowledg of their ſtate and condition.

### *Of Piſmires and Ants.*

NEither truly is the induſtry, diligence, and experience of the Piſmire leſs worthy of admiration, than that of the Bees. Inſomuch as that *Solomon* bids the ſluggard to take an example of diligence from the Piſmire. Truly, if experience did not witneſs it, it would ſeem incredible, that ſo ſmall a creature ſhould be able to ſtore up ſuch abundance of corn, to diſpoſe and manage her affairs in that good order that we ſee ſhe doth. *Pliny* ſaith, that they have among them the form of a wel-govern'd and wel-order'd Common-weal. For how pretty a ſight is it to ſee them, when they ſeiſe upon a grain they have a mind to carry away, how they ſet to it, and lift it with head and ſhoulders. And how leſt the corn which they carry to their ſtore-houſe, ſhould put forth and grow, they bite it at one end. If it be ſo bigg that they cannot carry it into their little hole, they divide it in the middle. If it be dampiſh, they lay it out to dry in the Sun and open air. When the Moon is at the full, they follow their work in the night; when ſhe doth not ſhine, they take their reſt, whereby they ſhew themſelves to have ſome knowledg of heavenly things. *Pliny* affirmeth that they have their ſet Fairs and Markets, whither they come in great companies, and where they uſe to eſtabliſh leagues of amity and friendſhip one with another. And when one marks them well, would he not think that they were in conference one with another, and that they did diſcourſe among themſelves of their buſineſs? Do we not ſee that the often trampling of their little feet doth wear a path even upon hard flint ſtones?

*Lib.* 11. *&* 30.

Wonderfull care.

There is nothing but may be attained by diligence.

From whence we may note, what in all kind of things is the effect of aſſiduity. They ſay alſo that they perform the rites of buriall one unto another, after the manner of men.

What

What words ſhall I uſe (ſaith *Plutarch*) to expreſs ſufficiently the diligence and induſtry of the Piſmires? There is not among all the great things in nature, a ſight of greater wonder than theſe: For in the Piſmires are ſeen the marks of all vertue. Their great meetings argue that they maintain a kinde of friendſhip.

Their alacrity in the undergoing of their labors, ſeems to ſhew their fortitude and magnanimity; and laſtly, they are eminent examples of temperance, providence, and juſtice. Their mutuall charity appeareth in this, that if one of them that is not loaden meets another, (in one of their narrow paths) that is, he will give him the way, that he may the better go on in his intended journey. They ſay that the firſt entrance into their hole, is not ſtreight, but full of many diverticles and crooked paths, which all end, which will bring you to three little cels; in one of which they have their conventicles; in the other, they lay up their proviſions; and in the third they bury the carkaſſes of their dead. This doth *Plutarch* ſpeak concerning Piſmires.

The forms of all vertues expreſt in Piſmires.

### *Of Silk-Worms.*

WIth the induſtry of theſe creatures, I ſhall not unfitly joyn that of the Silk-worms, of whoſe pains and care, both in the making of their neſts, and the ſpinning of their thred and bottoms (wherewith Kings are ſo magnificently adorned) Philoſophers have written very ſtrange things.

And who can chuſe but wonder at thoſe great endowments of skill and knowledg, and that exceeding induſtry, (the mother of ſo much wealth) in the little body of ſo ſmall a creature? The providence therefore of God, doth not only appear in this, that he hath adorned each creature with a peculiar and proper endowment, but in this eſpecially, that on the leaſt creatures of all, he hath beſtowed the greater portion of skill, induſtry, and ingenuity to ſupply their defect of bodily ſtrength.

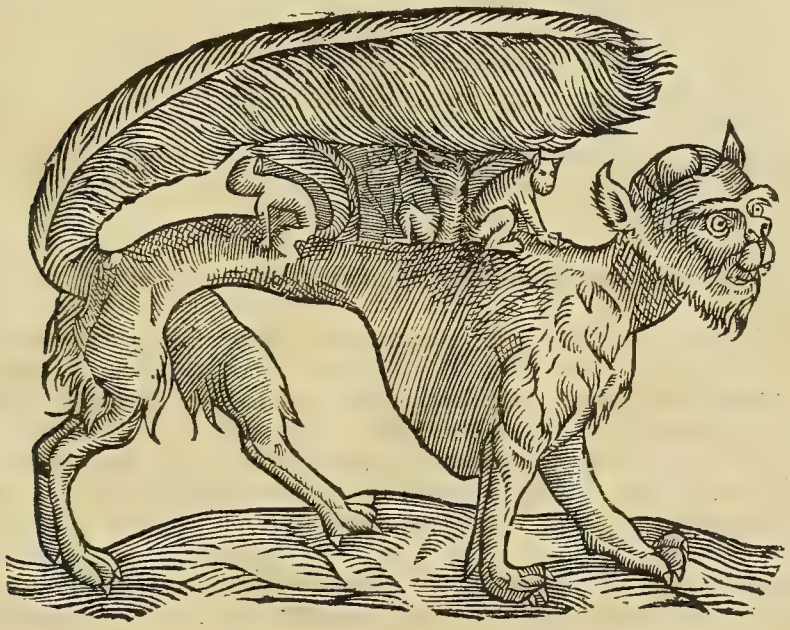
Diligence the mother of wealth.

### *Of the love of Beaſts one towards another, and to their young.*

PLutarch writeth, That all kind of creatures bear a ſingular love, and have a kind of care of thoſe that are generated of them, and the induſtry of the Partridges this way is much commended; for during the time that their young ones are weak and unable to fly, they teach them to lye upon their backs, and to hide themſelves among the clods on the ground, that ſo being almoſt of the ſame colour, they may not be diſcerned by the Faulkoner. But if notwithſtanding, they ſee any body coming, and that he is near them, they do with a hundred dodges and ſtoopings of themſelves, as if they were weary with flying, entice him away from their young to follow after them, and when they have their purpoſe, they then, as if they had recovered ſome freſh ſtrength, fly quite away; who can but wonder at this both affection and ſubtilty?

The induſtry of Partridg in preſerving their young.

In *Florida* part of the *Weſt-Indies*, they have a beaſt, which for the variety and deformity of it I cannot paſs over in ſilence; the natives call it *Succarath*, the Canibals, *Su-*



It keeps for the moſt part about the rivers, and the ſea-ſhore, and lives by prey. When he perceiveth that he is purſued by the Huntſman, he gets his young ones upon his back, and with his tail, which is very long and broad, he covereth them, and ſo flying, provideth both

both for his own and their ſafety; neither can he be taken by any other way but by pits, which thoſe ſavage men uſe to dig in the places near which he is to run, into which at unawares he tumbles headlong. This picture of him here, I drew out of *Thevets* Coſmographie.

*Tom. 2. lib. 23. cap. 1.*

How Hares provide for themſelves and their young, for fear of hunters.

Neither are thoſe things leſs wonderfull that are reported of Hares, for when they would go to their ſeat, they ſever their young, and commit them to the truſt of divers places, it may be two acres aſunder one from another, leſt peradventure a Huntſman, a dog, or any man ſhould chance to come that way, and they might be in danger to be loſt at once. And then after they have traced up and down, hither and thither, and every way that the dogs may not trace them, nor the huntſman prick them, they take a leap or two, and leap into their forms.

Nor inferior to this is the craft of the Hedghog, for when the Fox purſueth him, and is now at his heels, he rowls himſelf up in his prickles like a cheſnut in the outward ſhell, ſo that every part being rounded and encompaſſed with theſe ſharp and dangerous pricks, he cannot be hurt: and ſo ſaves himſelf by this trick. For his young he provides in this manner:

The care of the Hedghog to provide for her young.

In the time of Vintage he goes to the vines, and there with his feet he ſtrikes off the boughs and the grapes, and then rowling his body makes them ſtick upon his prickles, and ſo doth (as it were) take his burthen upon his back, and then returns to his hole; you would think that the grapes did move of themſelves; the prey he divides between himſelf and his young.

### *Of the affection of Birds, and of Dogs towards their Maſters.*

The piety of Storks.

THe young Stork provides for the old, which is diſabled by age; and if any one of their equals come to any miſchance, that he is not able to fly, they will give him their aſſiſtance, and bear him on their backs and wings. And therefore this affection and piety towards the old ones, and (as it were) brotherly love towards their equals, is commended in the Stork.

The Hen in any kind of danger gathers her chickens under her wings, and (as it were) with that guard, defends them as well as ſhe can. For their ſake ſhe expoſeth her ſelf to the cruelty of the fierceſt beaſts; and will fly in the eys of a Dog, a Wolf, or a Bear, that by chance offers to meddle with her chickens.

The fidelity of Dogs.

But who is there that doth not admire the fidelity and love of dogs towards their Maſters, whereby they recompence them for their keeping? A Dog will never forſake his Maſter, no, if he be never ſo hardly uſed. For there is no man can find a ſtick hard enough to drive that Dog clean away from him which hath once taken a love to him. There is no kind of creature that doth more certainly and readily remember his maſter; he will know the voice of all the houſhold, and of thoſe which frequent the houſe. There cannot be a truſtier keeper, (as *Cicero* himſelf ſaith) than a Dog is; I ſpeak not of their faculty of ſmelling, whereby they follow their Maſters by the foot, and find them, neither do I ſpeak of thoſe infinit examples of the fidelity of Dogs, which were too long to rehearſe.

Doves free from adultery.

Pigeons, as well the cock as the hen, although they are all very venereous, yet they know no adultery; yea, and the Hen will bear with the frowardneſs of the cock, neither will ſhe ever leave him, but reconciling him unto her by her officious diligence, bring him to his wonted dalliance and kiſſes, neither is the love of either of them leſs towards their young.

Turtles never couple twice.

There is the like mutuall bond of love between Turtles; for if one of them die, the ſurviver never ſolicits Hymen more, neither will he ever chuſe other ſeat than a dry withered bough.

### *Of the ſtrength, piety, docility, clemency, chaſtity, and gratitude of Elephants.*

AMong the beaſts of the field, there is none more vaſt, more ſtrong, or more to be feared than the Elephant. His ſtrength is ſufficiently ſhown by thoſe towred Caſtles of armed men which he carries, and fiercely ruſheth with into the battail. The *Roman* ſouldiers, being otherwiſe of undaunted ſpirits, yet in that battail which they fought againſt *Pyrrhus*, being terrified with the vaſtneſs and immanity of theſe bodies, which they had never before ſeen, preſently turned their backs and fled; which notwithſtanding, it is a wonderfull thing what Stories naturall Philoſophers tell of the vertues of the Elephant.

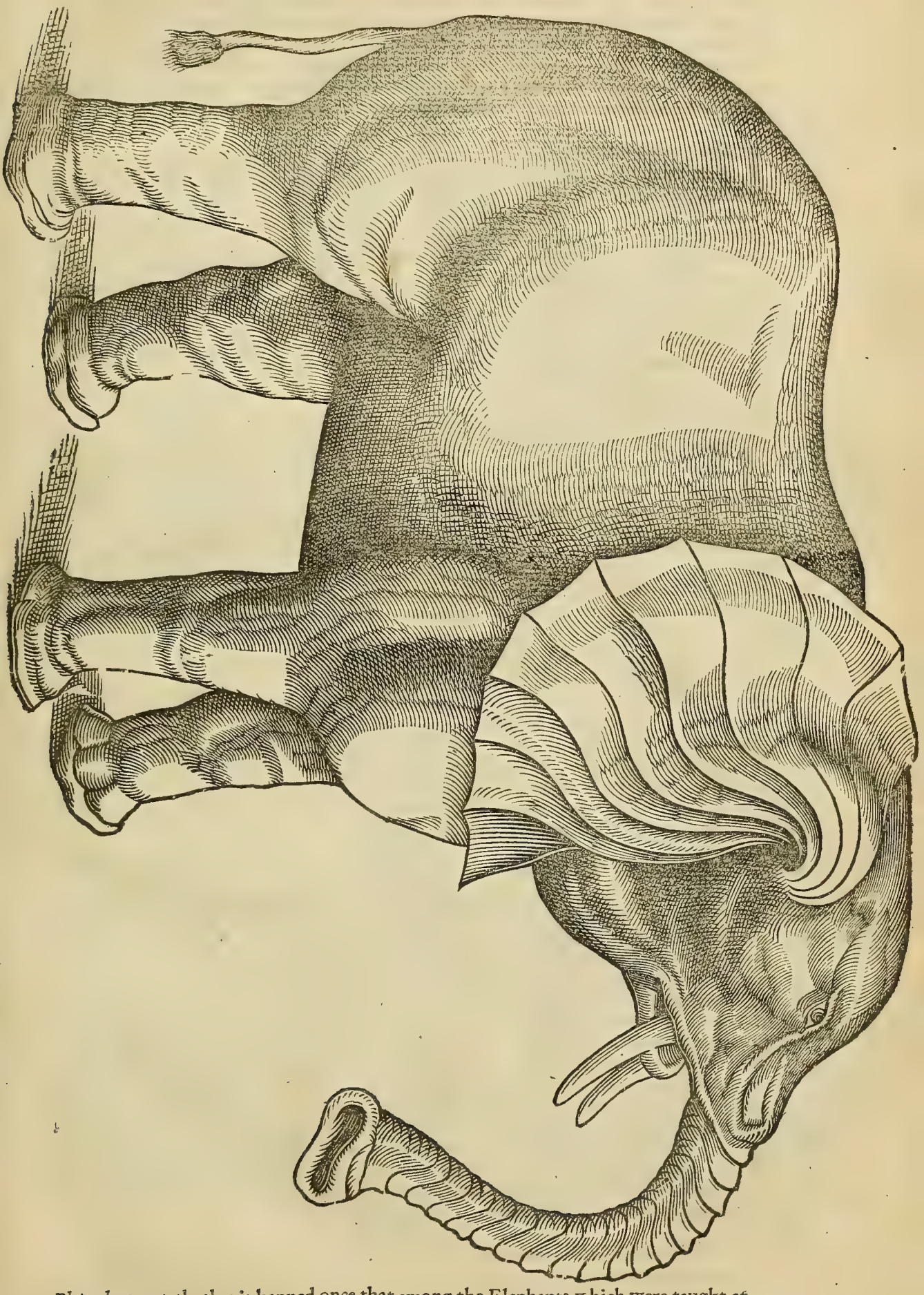
*Lib. 8. cap. 1.*

*Plinie* writeth, that an Elephant cometh very near to the underſtanding that men have, and that he hath a rude kind of knowledg of language; that his facility and obſequiouſneſs is wonderfull, that his memory in the performance of his wonted duties, is no leſs wonderfull. And for Religion (*Plutarch* ſaith) that they pray unto the gods, and ſprinkle and purge themſelves with ſalt water, and that with great reverence they worſhip the Sun at his riſing, lifting their trunks up towards heaven for want of hands. *Plinie* addeth, that they do with the like reverence worſhip the Moon and the Stars. For it it related in.

The religion of the Elephant.

the

the Hiſtories of the *Arabians*, that at a new Moon the Elephants go by troops down unto the rivers, and there waſh themſelves with water; and being thus purged, kneel down and worſhip the Moon, and then return to the woods, the eldeſt going firſt, and the other following after according to their age.



*Plutarch* reporteth, that it hapned once, that among the Elephants which were taught at *Rome*

*Some* againſt the Panegyrick ſhews, there was one that was ſomething dull, and not ſo docile as the reſt, which made him be deſpiſed by his fellows, and often beaten by his maſter. But that this Elephant, that he might ſupply by diligence what he wanted in wit, was oftentimes obſerved in the night, by the light of the Moon, to be practiſing and conning what he had learnt of his maſter in the day-time. For they were wont to be taught to make letters, and alſo to preſent garlands to the ſpectators, and other ſuch like tricks. But they can never be brought to go aboard a ſhip, to be carried over the ſea into any ſtrange land, unleſs their maſter give them his word to aſſure them that they ſhall return again to their own native ſoil. They never hurt any one that doth not firſt provoke them. They never gender but in private out of ſight, an argument of their modeſty.

*Plin. lib. 8. cap. 5.*

*Of the Lamprey.*

LEſt that the heat of affection may ſeem to lie quenched under the waters, let us by one example, (it were an infinit thing to ſpeak of all) ſee in what kind of mutuall love the creatures of the water come ſhort of thoſe of the land. The Lamprey of all the creatures of this kind doth worthily bear the praiſe for its piety towards thoſe of whom it was generated, its affection towards thoſe that are generated of her; for firſt ſhe breeds eggs within her, which in a ſhort time after are ſpawned. But ſhe doth not as ſoon as her young ones are formed and procreated, bring them ſtraight-way forth into the light after the manner of other fiſhes, that bring forth their young alive, but nouriſheth two within her, as if ſhe brought forth twice, and had a ſecond brood. Theſe ſhe doth not put forth before they are of ſome bigneſs, then ſhe teacheth them to ſwim and to play in the water, but ſuffers them not to go far from her; and anon gapes and receives them by her mouth into her bowels again, ſuffering them to inhabit there, and to feed in her belly ſo long as ſhe thinks fit.

*The ſavage or brute beaſts may be made tame.*

*Coſmograph. Tom. 2. lib. 19. cap. 7.*

THevet reporteth, that the Emperor of the Turks hath at *Caire* (it was once called *Memphis*) and at *Conſtantinople*, many ſavage beaſts kept for his delight, as Lions, Tigers, Leopards, Antilopes, Camels, Elephants, Porcupines, and many other of this kind. Theſe they uſe to lead about the City to ſhew. The maſters of them are girt with a girdle hung about with little bels, that by noiſe of theſe bels the people may be forewarned to keep themſelves from being hurt by theſe beaſts. But in hope of reward and of gifts, they ſhew them to Ambaſſadors of ſtrange nations, before whom they make theſe beaſts do a thouſand very delightfull tricks, and in the interim they play their countrey tunes and muſick upon their pipes and other inſtruments, and make many ſports in hope of gain.

*That Fiſhes alſo may be tamed.*

BUt it is far more wonderfull, that the creatures of the water ſhould be made tame, and be taught by the art of man. Among which, the chiefeſt are held to be the Eel. The ſame things alſo are reported of the Lamprey. For we have it recorded, that *Marcus Craſſus* had a Lamprey in his Fiſh-pool, that was ſo tame, and ſo well taught, that he could command her at his pleaſure. Therefore as a domeſticall and tame beaſt he gave her a name, by which when he called her, ſhe would come. And when this Lamprey died, he mourned for her in black, as if ſhe had been his daughter. Which when his colleague *Cneus Domitius* objected to him by way of reproach, he replying, told him, That he had buried three wives, and had mourned for none of all them three.

*Of the Lion, the Ichneumon, and thoſe other beaſts which are not eaſily terrified.*

The providence of the Lion in his going.

THe Lion when he goes, hath his claws always clutched, and (as it were) put up in their ſheaths, not only becauſe he would leave no mark of his feet, whereby he may be traced and ſo taken, but becauſe by continuall walking he ſhould wear off, and blunt the points of his claws. Buls when they fight charge one another with their horns, and like valiant ſouldiers, provoke and animate one another to the battail.

The greateſt are terrified by the leaſt.

The Ichneumon ſeems to imitate the moſt valiant ſouldier in his preparation and acceſs to battail; for he bedawbs himſelf with mud, and doth (as it were) buckle and make tite his armor, eſpecially when he is to encounter with the Crocodile; who although he bee a vaſt beaſt, is put to flight by this little creature. And this truly hath been obſerved to be by the ſingular providence of Nature, that the moſt vaſt creatures are terrified by the leaſt things, and ſuch from whence there can ariſe no danger; ſo they ſay the Elephant doth ſtartle at the grunting of an Hog; and the Lion, at the crowing of a Cock; although it be reported of the Lion, that no fear can make him turn his face. Theſe kind of fears, terrors, and affrightments, ariſing upon light and moſt ridiculous occaſions, we find as well in the ancient as modern Hiſtories of our times, to have diſperſed and put to flight mighty legions of ſouldiers, and moſt potent armies.

*That men were taught by Beaſts to poliſh and to whet their weapons, and to lye in ambuſh.*

SOuldiers are carefull to keep their weapons from ruſt, and therefore they carry them to the Armorers to be poliſhed. But in this care, many beaſts are nothing inferior unto

to them; for Boars whet their tusks againſt they fight. And the Elephant knowing that one of his teeth is doubled with digging at the roots of trees to get meat, keepeth the other ſharp, and touches nothing with it, preſerving it for his combat with the *Rhinocerot* his

The craft of the Rhinocerot about to fight with the Elephant.

enemy; but the craft of the Rhinocerot is very remarkable, that being in continuall enmity with the Elephant, at the time when he prepares for the battail, he whets his horn againſt a rock, as if it were with a whetſtone; nor (if he can chuſe) will he ſtrike any other part of the Elephant but the belly, becauſe he knows that part of the Elephant is ſo tender, that it may be eaſily pierced. This beaſt is in length equall to the Elephant, but in height he is inferior unto him, by reaſon of the ſhortneſs of his feet; he is of a paliſh yellow colour, and full of many ſpots.

*Of Cocks.*

Cocks are kingly Birds, and therefore Nature hath adorned them with a comb, as with a princely Diadem; and whereſoever they come, their magnanimity and courage makes them kings. They fight with their beaks and their ſpurs, and with their martiall voice they fright the Lion, who is otherwiſe the king of beaſts.

Cocks are kingly and martiall Birds.

*Of Conies.*

Conies have taught us undermining.

Conies have taught us the art of Undermining the earth, whereby the moſt lofty Cities and ſtructures reaching the very ſkies, are by taking away their foundation levelled with the ground.

*Marcus Varro* writes, that in Spain there was a town, and that no mean one, which ſtanding on a ſandie ground, was ſo undermined by a company of Conies, that all the houſes tumbling and falling down to the ground, the inhabitants were fain to depart aud ſeek new dwellings.

*Of Wolves.*

The deceits and ambuſhes of Wolves.

MEn have learnt the arts of waging War from the Wolves, for they come out by troops, and lye in ambuſh near the towns which they have appointed, and then one of them runs unto the town and provokes the dogs. And making as if he run away, incites the Dogs to follow him, untill he hath gotten them unto the place where their ambuſh lyeth, which on a ſodain appeareth, and ruſheth out upon them. And ſo they kill and eat all, or as many of the dogs as they are able to catch.

*Of the Fox.*

The craft of the Fox.

IN ſubtilty and craft the Fox exceedeth all other beaſts: when in the chaſe the Dogs are at his heels, he berays and bepiſſes his tail, and ſwings it in the face and eys of the Dogs that follow him, and ſo blinding them, in the mean time gets ground of them. To fetch the Hens down from their pearch, he hath this deviſe, he ſhakes and ſwings his tail upwards and downwards, as if he meant to throw it at them; which they fearing tumble down, and he takes up one of them for his prey. His warineſs when he paſſeth over a River that is frozen, is wonderfull; for he goes ſoftly to the bank, and lays his ear to liſten, if he can hear the noiſe of the water running under the ice. For if he can, back he goes, and will not venture to paſs over. The knowledg of which thing he could never meerly by his ſubtilty and craft attain unto, but that of neceſſity he muſt have ſome faculty of reaſoning joined with it; which by diſcourſe, and by proving one thing by another, arrives at this Concluſion: whatſoever is liquid and maketh a noiſe, is in motion; whatſoever liquid is in motion, is not concrete and frozen; that which is not concrete and frozen, is liquid; whatſoever is liquid, will not bear a heavier body; whatſoever will not bear a heavier body, cannot with ſafety be adventured on; and therefore back again muſt I go, and not paſs over this River.

The Fox ſeems to reaſon with himſelf.

His *Soriten.*

*Of Swine.*

SWine, if in the woods, they hear any one of the ſame herd with them crying out, they ſtraight make a ſtand; and marſhalling their forces, haſte all, as if they had been warned by the ſound of a martiall trumpet, to the aſſiſtance of their fellows.

*Of the fiſhes* Scarus *and* Anthia.

The love of Fiſhes one to another.

*PLutarch* reports of the *Scari*, that when one of them chances to ſwallow a hook, and be taken, the reſt of the ſame kind come to his reſcue, and ſhearing the Line with their teeth, ſet him at liberty. But the readineſs of the *Anthia* to the mutuall aſſiſtance of one another, is yet more manifeſt; for by caſting the Line upon which the hook hangeth on their back, with the ſharpneſe of their fins they cut it aſunder, and ſo ſet free themſelves and their captived fellows.

*Of the* Pilot-*fiſh.*

THere is great kindneſs between the Pilot-fiſh and the Whale; For although in bulk of body the Whale ſo far exceed him, yet he leads the Whale, and goes always before him

him as his Pilot, to keep him from running himself into any straight or muddy place, whence he might not easily get out. And therefore the Whale always follows him, and very willingly suffers himself to be led by him, it being for his own good. And in like manner he gets into the Whales mouth, and there lodging himself, sleeps when he sleeps, and leaves him not either by day or night. The Whales pilot or guide.

*Of Cranes.*

CRanes when they are to take a long journey into some Countrey cross the seas, put their company in so good order, that no Captain can put his souldiers in better. For before they stir out of any place, they have (as it were) their trumpets to call them together, and encourage them to fly. They come together, and then fly up on high, that they may see afar off, choosing a Captain whom they are to follow. They have their Serjeants to take care of their ranks, and keep their nightly watches by turns. *Plutarch* tels us that the Crane, which is appointed to stand Sentinell for all the rest, holds a stone in her foot, to the end, that if she chance to give way to nature and sleep, she may be waked by the noise of the falling stone. The leader lifting up his head, and stretching out his long neck, looks about him far and wide, and gives warning to the rest, of any danger that may befall them. The strongest lead the way, that they may the better with the flapping of their wings break the force of the air, and this they do by turns. And that they may the easilyer prevail against the force and opposition of the winds, they dispose their company into a wedg in the form of the Greek letter Δ or a triangle; and being skilfull in the stars, they foresee when tempests are coming, and fly down to the ground to keep themselves from the injury of the approaching storm. Cranes order themselves in ranks. The sentinell Crane.

*Of Geese.*

THe Geese of *Sicilie* do with great wariness take care, that by their keeking and their noise, they do not expose themselves to the rapacity of Birds of prey: for *Plutarch* saith, that when they are to fly over the hill *Taurus*, for fear of the Eagles that are there, they hold stones in their mouths to keep themselves from gagling, untill that they come unto a place where they may be secure. The care of the Geese that their gagling do them no harm.

*Of Dragons.*

NEither are the Dragons less crafty; for thus do they overcome those vast and otherwise invincible beasts the Elephants. They lye in ambush, and sodainly set upon the Elephants where they fear no such matter, and involve their legs with the twines of their tail, in such sort, that they are not able to go forward; and stop their nostrils with their heads, so that they cannot fetch their breath, they pull out their eys, and whersoever they find the skin most tender, there they bite and suck the blood untill they make them fall down dead. *Pliny* saith, that there are Dragons found in *Æthiopia* of ten Cubits long, but that in *India* there are Dragons of an hundred foot long, that fly so high, that they fetch Birds, and take their prey even from the midst of the clouds. The craft of Dragons fighting against the Elephant. *Lib* 8. *cap.* 11. & 12.

*Of the Fish called the* Fisherman.

THis fish is called the Fisherman, because he hunts and takes other Fishes, which he doth almost by the same cunning which the Cuttell uses; for he hath hanging at his throat a certain bag, like the Wattels of a Turky-cock. This when he listeth he casteth out, and layeth before the little Fishes for a bait, and then by little and little draws it up again, untill he catch for food the little Fishes seising upon it as a prey. The craft of the Fisherman-fish in taking her prey.

*Of the Cuttell Fish.*

WOnderfull is the craft of the Cuttell-fishes, for they carry a bladder at their neck full of a black juice or ink, which they pour forth as soon as they feel themselves taken; that so they may blind the eys of the Fishermen, as *Plutarch* saith, and as *Aristotle* witnesseth, they with their long fangs do not only hunt and take little Fishes, but oftentimes also Mullets. The craft of the Cuttell to save her self. *Lib. 9. de Hist. animal. cap. 37.*

*Of the arms or weapons of brute Beasts.*

BRute beasts are naturally so furnished with arms, that they have no need to get, make or borrow in any other place.

And some of them nevertheless are so furnished with such arms, that they captivate those which hold them prisoners; an example of this is the *Torpedo*, which doth not only hurt by touch, but also by the net being between, he breaths such a quality from him, as stupifies the hands of the Fishermen, so that they are forced to let go their nets, and so let him go; moreover if it touch a ship it makes it stay. *Thevet* writes, that the *Persian* bay towards *Arabia*, nourishes a fish equal in length and thickness to a Carp, on every *Cosmogr. tom. 1. lib. 10. cap. 12.*

ſide encompaſſed with ſharp and ſtrong pricks, like our Porcupine, with which he fights againſt all kinds of fiſh. If a man chance but to be lightly hurt either with theſe or his teeth, he will die within 24 hours.

### *Of the fiſh Utelif.*

HE ſaith moreover, That as he was carryed by force of tempeſt through the Atlantick Ocean, he ſaw this fiſh, having(as it were) a Saw in his forehead of three foot long, and four fingers broad, armed on each ſide with ſharp ſpikes; they call it *Utelif* in their Countrey ſpeech.

### *Of the fiſh Caſpilly.*

THere is another fiſh to be ſeen in the Arabian-gulf, which the Arabians call Caſpilly, it's two foot long, and as many broad, it hath a skin not much unlike a Dogfiſh, but armed with ſpikes, one whereof he carries in his forehead a foot and half broad, in ſharpneſs and force of cutting not much ſhort of a graver or chiſſell: with this weapon, when ſhe is oppreſt with hunger,ſhe aſſails the firſt fiſh ſhe meets, neither doth ſhe give over, before ſhe carry her as a prey whither ſhe pleaſe, as *Thevet* ſaith he hath ſeen.

*Tom.* 1. *lib.* 5. *cap.* 2.

### *Of Crabs.*

CRabs and Lobſters, though in the quantity of their body they be but ſmall, yet they uſe their forked claws before,not only in feeding but alſo in defending themſelves and aſſailing others.

### *Of the docility of Beaſts, and firſt of the Dog.*

BEaſts are apt to learn thoſe things which men deſire, whereby they ſhew themſelves not wholly void of reaſon. For Dogs, Apes, and Horſes learn to creep through the Juglers hoops, and riſe on their hinder feet, as though they would dance. *Plutarch* tels, that a Jugler had a Dog which would repreſent many things upon the ſtage befitting the occaſion and argument of the Play; amongſt the reſt, he exceeded all admiration in that, that taking a ſopotifick medicin, he excellently feigned himſelf dead; for firſt, as taken with a giddineſs in his head he begun to tremble, then preſently fell down, and lying on the ground, as it were contracted his dying members, and laſtly, as if truly dead he wax'd ſtiff; and moreover ſuffered himſelf diverſly to be fitted according to divers parts of the Theater, the fable ſo requiring. But when he, by thoſe things that were ſaid and done, knew it was time to riſe, he firſt begun to move his legs by little and little, as if he had been wakened from a ſound ſleep; then preſently with his head a little lifted up, he looked this way and that way, to the great admiration of all the beholders; and finally riſe up and went familiarly and chearfully to him he ſhould; the which ſight the Emperor *Veſpaſian* (who was then preſent in *Marcellus* his Theater) never ſaw any which more delighted him.

The wonderfull docility of Dogs.

A ſpectacle full of admiration and truth.

### *Of the Ape.*

AN Ape is a ridiculous Creature, and which makes men much ſport in imitating their actions. There hath been ſeen an Ape which would pipe and ſing, and beſides dance and write, and endevour to perform many other things proper to men. I remember I ſaw in the Duke of *Somes* houſe a great and curſt Ape, who becauſe he much troubled many, had his hands cut off, who ſuffering himſelf to be cured, when the wound was cicatrized, he grew more milde and docile. Wherefore cloathed in a green coat, and girt over his loins with a girdle, he carried hanging thereat a caſe of ſpectacles, a pair of knives, and a childs handkerchief. He was committed to the charge of the Maſter-cook to teach, becauſe he had taken up his lodging in the Chimney-corner, he was taught many tricks and feats. If at any time he ſwerved from his doctrine and precepts, in a trice the whip was upon his back and loins, and much was abated of his daily allowance; for as *Perſius* ſaith, The belly is the Maſter of Arts, and ſharpener of wit. By theſe means he profited ſo in a ſhort time,that he much exceeded all the Apes of his time in the glory of his wit; and there was none counted more skilfull in leaping and dancing to the pipe, running up a pole,and nimbly leaping through his Maſters legs. To conclude,he performed all the actions of a ſtrong Ape, and very reverently carried up diſhes with the waiters and ſerving-men, and made clean the diſhes and platters by licking,and did much other drudgery, ſo that he was commonly called, Maſter *John Do-all*. At dinner and ſupper ſitting in a chair, he ſaid grace, and caſt his eys up towards heaven, and rouled them this way and that way, and ſmote his breaſt with the ſtumps of his hands with much lamentation, and imitated prayer by the gnaſhing or beating together of his teeth. He would turn up his tail to any that offended him, (for his coat ſcarce covered half his buttocks leſt he ſhould have filed it)he made much other paſtime, always going upright by reaſon of the cutting away of his hands, unleſs at any time through wearineſs he were forced to ſit on his buttocks.

*Gal. lib.* 1. *de uſu partium.*

Of

*Of the Camels.*

THe *Camell* is a very domeſticall and gentle beaſt, and which is eaſily tamed and taught all kind of obedience and ſervice; although ſome of them are cruel, wilde and

trouble-

Camels both tame and wilde.

troublesome by biting and striking such as they meet, no less than untamed horses. There is no need to house them in the night, for they may be left in the plain fields in the open and free air, feeding upon the grass and trees and cropping the tops of the thistles, neither in the morning do they any whit the worse undergoe or carry their burdens. They

The easie and not chargeable keeping of Camels.

are not put to carry burdens before they be four year old. The *Arabians* geld them young, that they may enjoy their labour the longer, neither being gelt do they rage for love or desire of Venery. At the putting in of the Spring they endure hunger and thirst for eight dayes; they are so dutifull, that at the beck of the Turkish slaves, or but touched on the

Camels know when they have a sufficient load.

neck with a twig, they presently kneel on the ground to take up their burden, neither do they lift themselves up before that they find they have a sufficient load laid upon them. Those that have but one bunch upon their back are of *Africk*; but such as have two bunches are of *Asia*, or *Scythia*. Those kind of Camels that are the bigger are used to carry packs, but the lesser are used to ride upon, as our horses are. They love nothing so well as beans, and yet they live content with four handfuls of beans for a day. The greatest wealth of the *Arabians* consists in Camels, and so they estimate their riches, not by the quantity of silver, or gold, but by the number of Camels. The *Turkish* Emperour (*Thevet* being the reporter) made a Captain over the heards of his Camels, giving him a great troop of *African* and Christian slaves, that they might be the better looked unto. I have heard it reported (saith *Thevet*) by certain *Arabian*, *African* and *Jewish* Merchants who were present, at that time when *Sultan Selim* the first of that name, besieged *Caire* in *Ægypt*, (which in former times was called *Memphis*) that there then was in that Emperors army sixty thousand Camels, besides a mighty company of Mules.

Camels both to carry burdens, and to ride upon.

A mighty troop of Camels.

### *Of ravenous Birds.*

The diligence of Falconers in training up their Hawks.

BUt let us take a view of Falconers teaching ravenous Birds, how with swift wings carried aloft into the air, they may seise upon other Birds, and cast them down dead to the ground; in performance whereof, they often too freely soare up to the clouds, so that they carry themselves out of the Falconers sight, with a desire to sun themselves, neglecting in the mean time their designed prey.

The fight of the Hern and Falcon.

The Hern when she sees her self kept under and below the Falcon carried up by his strong wings with a marvailous swiftness, with her beak, which is long and sharp, hid under her wings, and turned upwards, she receives the Falcon blinded with the heat of fight and desire of prey, carelesly flying down and rushing upon him; so that he often strikes him through the gorge, so that oft times they both fall down dead to the ground. But if the Falcon without harm escape the deceits by art, and the happy turning of his body, and the Hern be not cast down, the Faulconer calling her back with never so loud a voice, yet by setting up her Feathers she dares her to the pretended fight.

### *That Birds have taught us musicall tunes.*

To sing like a Nightingale.

THe Nightingales are sweet and excellent singers, tuning their notes with infinite quaverings, and diversities of sounds, so prettily and sweetly, that humane industry can scarce equal the sweetness thereof, by so many musicall instruments; so that we say, he sings like a Nightingale, who varies his voice with much variety. In which thing Birds much excell men, because they have that admirable sweetness of singing from nature it self without any labor of learning; which men can scarce attain to in any school of musick, by having their ears a thousand times pluckt by the hand of a curst master.

### *That Beasts know one anothers voice.*

The voice to beasts is of the same use, as speech is to men.

BEasts know one another by their voice, so that they may seem to talk and to laugh together, whilst flattering with their ears, they pluck in their noses with a pleasant aspect of their eys; and as speech is given to men, so Birds have their naturall voice, which is of the same use to them, as speech is to us. For all Birds of the same species, as men of the same countrey, chant and chirp to one another, when men understand not the speech of other men, unless of the same Nation. Wherefore the Scythian tongue is

We are as ill as deaf, when we hear an unknown language.

no more profitable to one living in Egypt, than if he were dumb; nor the Egyptians understand it no more than if they were deaf. Wherefore an Egyptian is dumb and deaf to a Scythian. This those which travail well understand how many dangers, how many troubles they undergo, because they cannot express their minds, and require things necessary for life. Wherefore to the assistance of this unprofitable tongue, we are compelled to call the rest of the members, and to abuse the gestures of the head, eys, hands, and feet. Truly the condition of brute beasts is not so miserable, seeing that all of the same kind whersoever they be, may answer each other with a known voice. Truly if any should hear a German, Briton, Spaniard, Englishman, Polonian, and Greek, speaking amongst themselves in their native tongues, not understanding any of them, he could scarce discern, and certainly judg, whether he heard the voice of men or of beasts.

That

*That Birds may counterfeit Mans voice.*

LInets, Larks, Pies, Rooks, Daws, Crows, Stares, and other ſuch like Birds, ſpeak, ſing, whiſtle, and imitate the voices of men, and other creatures. In this Parrats excell all other, being wondrous skilfull imitaters of mens voices, and very merry, but ſpecially when they have drunk a little wine. Parrats are wonderfull imitaters of mans voice.

*Plutarch* reports that there was a Barber at *Rome*, who kept a Pie in his ſhop, which ſpoke exceeding well, and that of her own accord, none teaching her, when ſhe firſt heard men talking together; ſhee imitated the voice or cry of all beaſts ſhee heard, as alſo the ſound of Drums, and the ſound of Pipes, and Trumpets; to conclude, there was nothing which ſhe did not indevour to imitate. There have been Crows that have ſpoken and articulately ſung ſongs and Pſalmes, and that of ſome length. To which purpoſe the Hiſtory of *Macrobius* is notable; for he tels that there was one amongſt thoſe, who went forth for luck ſake to meet with *Auguſtus Cæſar*, returning from the war againſt *Antonius*, who carried a Crow, which he had taught plainly to pronounce this ſalutation, *Salve Cæſar Imperator Auguſtiſſime*, that is, *God ſave thee, O moſt ſacred Emperor Cæſar.* *Cæſar* taken with the novelty of this ſpectacle, bought this obſequious bird with a thouſand peeces of ſilver. *Pliny* and *Valerius* have reckoned up amongſt prodigies, Oxen and Aſſes that have ſpoken. I omit infinit other things recorded by the ancients, *Plato*, *Ariſtotle*, *Pliny*, *Plutarch*, and other Philoſophers of great credit, of the docility of beaſts, and their admirable felicity of underſtanding. Which things, if untrue, theſe learned men would never have recorded in writing, leſt ſo they might brand with vanity, (then which nothing is more baſe) the reſt of their writings to poſterity in all enſuing ages. A talking Pie. *Lib 2. Saturn. cap. 4.*

*Of the Sympathy and Antipathy of Living Creatures amongſt themſelves.*

HAving briefly deſcribed the underſtanding of brute beaſts, it ſeems not impertinent to ſet down ſome things more worthy of knowledg, happening unto them by reaſon of Sympathy and Antipathy; that is, mutuall agreement and diſagreement, which happens not only to them living, but alſo dead, by a certain hidden property, through occaſion whereof ſome deſire, other ſhun, and others proſecute one another even to death. In teſtimony whereof; The *Lyon* the King of Beaſts excelling all other in courage and magnanimity, fears the Cock, for he is not only terrified by his preſence, but alſo by his crowing being abſent. So an Elephant fears a Hog; but he is ſo afraid of Mice and Rats, that he will not touch the meat that is given him, if he ſmell that it hath been defiled with ſuch creatures. There is deadly hatred between the Elephant and Rhinocerot; yet when the Elephant is furious and angry, he becomes quiet and calm at the ſight of a Ram. A Horſe is ſo afraid of a Camel, that he cannot indure his ſight. The Dog hates the Wolf, the Hart flies the Dog. The Snake flies from and fears a naked man, and followes him being clothed. There is deadly hatred between the Aſpis and Ichneumon, for he when he hath rowled himſelf in the clay, dries himſelf in the Sun, and ſo being covered over (by doing thus divers times) as it were with ſhells, or armour, he enters into combat, ſtretching out his tail, and preſenting his back, untill he get opportunity to choak his adverſary, by leaping and faſtening on her jaws, by which ſtratagem he alſo kils the Crocodile. The green Lizard is a capitall enemy to the Serpent, but moſt friendly to man, as *Eraſmus* witneſſeth by many Hiſtories concerning that matter, in his Dialogue of Sympathy and Antipathy. There is a great deal of hatred between a Man and a Wolf, which is moſt manifeſt by this, that if the Wolves firſt ſee a man, his voice is taken away, and his intended cry hindered. If the Weaſell intend to ſet upon the Aſpis that moſt venemous Serpent, ſhee arms her ſelf by eating Rue, as a moſt certain Antidote. The Ape fears the Torpedo, as *Eraſmus* manifeſts by a pleaſant hiſtory in the forementioned Dialogue; where alſo he prettily ſhews the deadly hatred between the ſerpent called Areus and the toad. The like hate is between the Owl and Crows, ſo that the Owl dares not go out, fly abroad, or ſeek her food unleſs by night. The water or River fowl are afraid of the Falcon; that if they but hear her bells, they had rather be killed with ſtaves and ſtones, than take wing to flie into the air. So the Lark yeelds herſelf to be taken by a man, leſt ſhee fall into the talons of the Hobby. The Caſtrill, or Merlin is naturally a terror to Hauks, ſo that they both ſhun his voice and preſence. The Lion fears a cock. A horſe fears a Camell. What foul fear the Falcon.

The Kites are all at perpetual enmity with the Crows, wherefore the Crow alwayes gets away the Kites proviſion. All kind of Pullen fear the Fox. The Chicken fears neither a Horſe, or an Elephant, but ſcarce hatched, it preſently runs away at the voice or ſight of a Kite, and hides it ſelf under the hens wings. The Lambe and Kid flie from the Wolf when they firſt ſee him, neither doth death give an end to that hatred, but it ſupervives their funerall. An Experiment whereof (they ſay) is, that if one Drum be headed with Wolves skins and another with Sheeps, and beaten up together, you ſhall ſcarce hear the ſound of the Drum covered with ſheeps skins. And beſides, if you ſtring one Harp with ſtrings made of ſheeps guts, and another with ſtrings of Wolves guts, you cannot bring it The enemity between the Kites and Crows. The diſcord between the Lamb and Wolf is not ended by death.

it to pass, by any art, to make them agree and go in one tune. It is reported from the experiments of many men, that if a Wolves head be hanged up on high in the place where Sheep are, that they will not touch the grass how good and fresh soever it be, nor rest quiet in any place, but tumultuously run up and down, untill all such kind of terror be taken away. The hate betwixt Mice and Weasels appears by this, that if you mix never so little of the brains of a Weasell in the rennet, with which you crudle you Cheese, the Mice will never gnaw or touch that cheese. The Linnet doth so hate the bird *Florus*, that both their bloods put into one vessel cannot be mixed together. A Wolves head hung up in a dove-house, drives away Poll-Cats and Weasels. The Panther and Hyæna burn with so great hatred, that if both their skins be laid one against the other, the Panthers will shed the hair, the hairs of the Hyæna remaining entire and not moved; which thing, they say, happens to the feathers of other birds if any one chance to tye them up in a bundle with the Eagles. Let these suffice for some few examples of many, of the Antipathy amongst beasts. But of the Sympathy and consent of beasts amongst themselves, I think needless to write any thing, being it is sufficiently known to all, that one Jay associates another, and the cruel Bears agree amongst themselves; and beasts of the same species do wonderfully consent one with another.

How to make cheese that Mice will not gnaw.

*That Man excells all beasts.*

I Now think it fit to assay to write of that excellency of man over beasts, which I have so long intended. Neither would I that Epicures and other too much naturall and materiate Philosophers, so take those things I have written of the endowments of beasts, as though we should think, there were no difference between man and beast. I had no such meaning, no such intention; but only that man should not become too stately, or too ingrate in less acknowledging God to be the Author of so many benefits with which he abounds. For whatsoever we have largely spoken of beasts, yet there is no comparison between beasts and man, for there is too great a difference between them. For mans mind is adorned with religion, justice, prudence, magnanimity, faith, piety, modesty, clemency, fortitude, and other vertues as lights, which shine much more bright in man than in beasts. For they are sometimes all in some one man, each whereof are thought great in beasts. For seeing that man is made to the Image of God, it cannot be, how much soever he defile himself with the pollution of vices, that he can so obscure that inbred light, but that alwaies some beam of the divine wisdome will be inherent & shine in him. But although by collation to some beasts, he may seem a defective and weak Creature; yet no fortitude nor strength of beasts can be so great as to equall the fortitude of man. For God hath ingraven in man the character of his divine vertue, by the assistance whereof, he might have all beasts under and obedient to him. And though by that we have formerly said, beasts may seem to have a certain shadow of reason, yet that small light is not fit for many and divers uses, but there is only given them so much providence, as should be sufficient for them and the preservation of their bodies. But men have reason given them to crop or gather the fruits of eternall life, (as *Lactantius* saith) whereby it comes to pass, that man only, amongst so many creatures, hath sense and understanding of divine things. Which *Cicero* thought to be known by that, because man only had a certain knowledg of God in his mind. Wherefore he was inriched by God with reason, speech and hands as helps for the performance of all his actions; moreover by his singular and almost divine wit he easily excels all brute beasts. For first, reason being his guide, he invented things necessary for life, fitly imposed names on the things invented befitting their natures, framed letters and Characters, invented all liberall Arts and handy-crafts, and found means to measure the Land and Sea. He hath observed and drawn into an Art the spaces of the Celestiall Globe, the distinctions of the Stars, the changes and orders of dayes and nights, of times and seasons, the rising and setting of Stars, and their power and effects over these lower bodies. Lastly, he records in writing to perpetuall memory that which concerns his own nature, or the nature of other things, the precepts and ordinances of life and manners: by which singular gift, we can now confer with *Socrates*, *Plato*, *Aristotle*, and other Philosophers of ancient times, as if they were living.

Mans bears Gods image.

Man hath given names to things.

*What benefit man hath by reason of his native nakedness and ignorance.*

BUt as Mans body is by nature naked and unarmed, so is his mind like a smooth table in which nothing is painted, nothing graven; but for help of his nakedness he hath hands, and for supply of his ignorance, reason and speech. And by these three being as it were the ministers of infinite variety of things, he clothes and defends his body with all things needfull: and inriches his mind with the knowledg of Arts and Sciences. Now if he had certain weapons born with him, he should use them only; if he should be born skilfull in any Art, he would meddle with none else. Therefore because it was more expedient to use all sorts of weapons with the hand, and be skilfull in all Arts; therefore he must be born wanting and ignorant of all. *Aristotle* very wittily called the hand the instrument of instruments: in imitation of which speech, one may rightly affirm, that reason is the

*Gal. cap. 4. lib. 1. de fa partium.*

*As the hand is the instrument of instruments so reason is the art of arts.*

Art

Art of Arts: for as the hand in worth exceeds the other instruments, because it can make, handle and fit them for use; so reason and speech, though names of no Art, yet comprehend and encrease all Arts. Therefore man seeing he hath his mind instructed by Art, that is, by reason; it is fit he should have his body defended with a weapon, or instrument, that is, the hand, which in agility and excellency should excell all other instruments. For so Man hath of his hands in stead of all weapons, which he may use in war and peace as the instruments of all Arts; he wants not the Buls horns, the Boars tuskes, the horses hoofs, nor to conclude, any arms of any other Beast. For by the benefit of his hands he can handle other arms far more profitable and safe; as a Lance, Sword, Spear, halberd; but man also can use at some distance the bow, sling and handgun, when the horn and the hoof cannot be used but neer at hand. But some may say; A Lyon exceeds a man in swiftness of foot; what then? is man therefore inferiour to him? no, for by the means of his hands and the guidance of his reason he bridling and riding upon a horse, out runs the Lyon, and being victor follows him to and again as he himself pleases, or vanquished flies away, and from the horses back as from a tower wounds the Lyon with what weapons he pleases. To conclude, man is aboundantly provided with means, to defend himself from the violence of all other beasts. For this purpose he doth not only harness himself as with brasen wals, but also makes ditches and Bulwarkes, he makes by the ministery of his hands all kind of weapons, weaves himself garments, casts into the water and draws forth nets to catch fish; and to conclude, he performs all things to his own contentment, and having that priviledge granted him by God, he rules over all the earth; all things which lye hid in the bowels of the earth, which go, or creep upon the earth, which swim in the Sea, and flie through the air, or are any where shut up in the compass of the skie, are in mans dominion.

Man under God is the king and Emperour of the world.

*How wonderfull God hath shewed himself in making man.*

GOds Deity and providence hath principally shewed it self in the creation of man; neither his so admired light hath so shone in the production of other creatures, seeing that God would have them to live and have their being, only for mans sake, that they might serve him. Therefore man is, if we diligently consider all his endowments, a certain pattern and rule of the divine majesty and (if I may so say) Artifice. For being made to Gods image, he is as it were his coin, exceeding the capacity of all humane understanding. Which seemed a just reason to the ancient Philosophers, that he should be called *Microcosmos*, or a little world, because the particles of all things contained in the compass of heaven and earth, are contained in his mind and body, that in the mean time I may in silence pass over his soul more great and noble than the whole world.

Man is the end of all mundane things.

Man a little world, yea almost a great world.

*Why Nature hath not given Man the faculty of presaging.*

THis seems the reason, that men by the instinct of nature do not foresee the future seasons & dispositions of the heaven & air; because, seeing they have received certain sparks of prudence from God, by whose care and guidance they are led to the knowledg of things by no deceitfull but certain judgment, being not obnoxious to the conditions and changes of times and seasons, as beasts are. Wherefore knowing all these airy changes to be placed under them, that is to say, their minds, according as occasion serves, and their minds desire, they give themselves to mirth when the air is wet, stormy and dark, and on the contrary, in a clear and fair season, to a sincere and grave meditation of things sublime and ful of doubt. But beasts accommodating themselves to that disposition of the air which is present and at hand, are lively, or sad, not from any judgment as men, but according to the temper and complexion of their bodies following the inclinations of the air, and of the humors one while diffused, another while contracted. Neither ought we to blame man, because he can imitate the voice of beasts, but rather much commend him, that he can infinitely wrest and vary one thing, that is, his voice; for men can barke like Foxes and dogs; grunt like hogs; whet and grind their teeth like boars; roare like Lyons; bellow like bulls; neigh like horses; knack their teeth like Apes; houl like Wolves; bray like Asses; bleat like Goats and Sheep; mourn like Bears, Pigeons, and Turtles; Keeke and gaggle like geese; hiss like Serpents; cry like Storks; caw like a Crow, and crow like Cock; clock like hens; chatter as Swallows and Pies; sing like Nightingales; croak like Frogs; imitate the singing of Wasps, and Humming of Bees; mew like Cats. The singing of Birds scarce seems to merit the name of Musicall, compared to the harmony of men fitted and tuned with infinit variety of voices. For with this they possess the ears of Kings and Princes; provoke and temper their wrath, and carry mens minds beyond themselves, and transforme them into what habits they please. But if those cruell beasts have any humanity, they owe it all to man. For he tames Lyons, Elephants, Bears, Tigers, Leopards, Panthers, and such other like.

Man is not obnoxious to the air and stars.

One man will counterfeit the voices of infinite varieties of beasts.

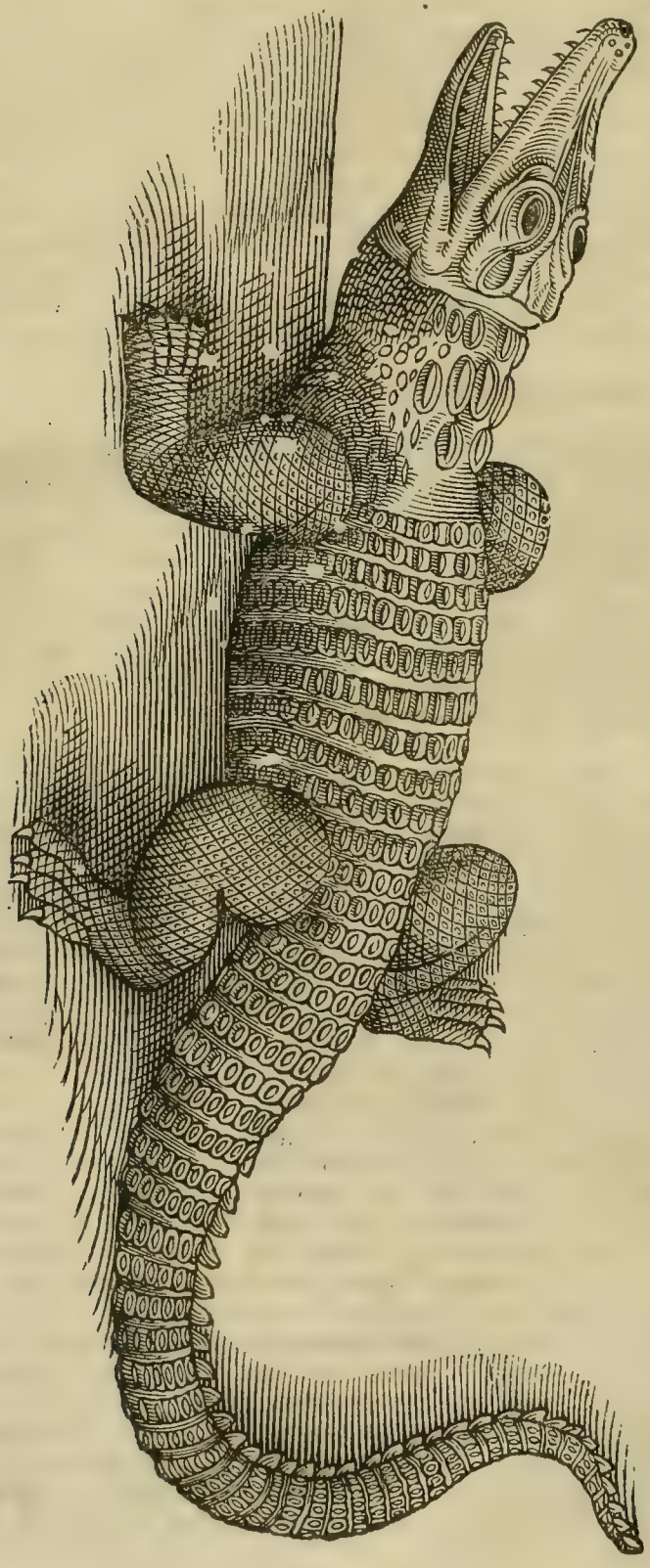
The power of Musick.

Of

*Of the Crocodile.*

A tame Crocodile.

PLutarch reports of the Crocodile (whose figure is delineated) that being tamed, and taught by man, he doth not only hear mans voice, and answers to his call, but suffers himself to be handled, and opening his throat, lets his teeth be scratched and wiped with a towell. How small a part of Physick is that, which beasts are taught by nature? Certainly nothing in comparison of man, who by the study and practise of a few years can learn at his fingers ends all the parts of Physick: and practise them not only for his own, but also for the common good of all men. But why cannot beasts attain unto the know-



ledg of Physick so well as men? I think, because so great an Art as Physick is, cannot be attained unto by the dull capacities of Beasts.

But

But for that I have written of the Religion of Elephants, if I muſt ſpeak according to the truth of the matter, we cannot ſay they worſhip God, or have any ſenſe of the divine Majeſty. For how can they have any knowledge of ſublime things or of God, ſeeing they wholly following their food, know not how to meditate on celeſtiall things? Now for that they behold and turn themſelves to the Moon by night, and to the Sun in the morning, they do not that as worſhipping, or for that they conceive any excellency or divinity in the Sun; but becauſe nature ſo requiring and leading them, they feel their bodies to rejoyce in that light, and their entralls and humors to move and ſtir them to it. Therefore when we attributed religion to Elephants, we ſaid it rather popularly, than truly, and more that we might exhort men to the worſhip of God, than that we thought Elephants had any knowledg of divine worſhip implanted in their minds.

In what ſenſe we ſaid Elephants had religion.

*That man may attain unto the knowledg of all voices and tongues.*

THe docility of mans wit is ſo great, and facility of the body obeying that divine gift of wit ſuch, that he is not only able to learn to underſtand and ſpeak the tongues of divers nations differing in ſo many peculiar languages; and not only to imitate and counterfeit the voices of all beaſts though ſo much different from man, which many flattering and jugling companions, followers of other mens tables, will do; but alſo may be able to know and underſtand both what they pretend and ſignifie. In confirmation of which thing they cite the Philoſopher *Apollonius* moſt famous in this kind of ſtudy and knowledg. He walking on a time amongſt a company of his friends through the field, and ſeeing a Sparrow come flying and chirping much to divers other Sparrows ſitting upon a tree, is reported to have ſaid to thoſe which were with him: That bird which came flying hither, told the other in her language, that an Aſs laded with corn was fallen down at the City gate, and had ſhed the wheat upon the ground. Wherefore *Apollonius* and all his friends which minds were with him went thither to ſee whether it were ſo, and found that it was ſo, as he had told them, and obſerved that the Sparrows moved thereto by the coming of the other, were eating up the grains of Corn ſhed on the ground.

Man not only the imitater, but the interpreter of the voices of beaſts and birds.

But for Crows and Pies artificially taught to counterfeit mens voyces, it is too ſmall a thing, that for that cauſe they ſhould contend with men. For they have quickly babled all they have learnt with longer coſt and labour, tediouſly ſinging ſtill the ſame ſong, and whatſoever they prate they do it without ſenſe, underſtanding or any reaſon for what they ſay. But man alwayes contemplating ſomewhat more high, ſtill thinks of greater things than theſe preſent, and never reſts. But burning with an infinite and endleſs deſire of knowledg, he doth not only covet to know theſe things which appertain to food and cloathing, but by caſting up his eyes towards heaven, and by the light of his mind, he learns and underſtands things divine. Which is ſo certain an argument of the celeſtiall originall of our ſoul, that he which conſiders thoſe things can no wayes doubt, but that we have our minds ſeaſoned, by the univerſall divine underſtanding. But now it is time for us to ſet thait upon the deſcription of the body, the habitation and fit inſtrument of al the functions of divne mind.

The unquenchable deſire of learning in man.

## *The End of the ſecond Book.*

# The third Book,

TREATING

## *Of the Anatomy of MANS BODY.*

IF Following the custom and the manner of such as before me have written of Anatomy, will first, (that I may make the minds of the Readers more attentive and desirous of these studies) declare how necessary it is, and also how profitable, and then shew the order to be observed in it, before I come to the particular description of mans body.

The necessity of the knowledg of Anatomy.

Furthermore how Anatomy may be defined, and the manner of the definition of the parts. For the first, the knowledg of Anatomy seems in my judgment very necessary to those that desire to excell, or attain to perfection of Physick; that is, whereby they may be able to preserve the present health of the body, and the parts thereof, and drive away diseases. For how can either Physitian or Chirurgeon preserve health by the use of the like things, which consists in the temperament, conformation, and naturall union of the parts; or expell the disease which hurts those three, by the like use of their contraries, unless he shall know the nature and composure of the body, and understand as by the rule of this knowledg, how much it swerves from the nature thereof? Wherefore it is excellently said of *Hippocrates*; that the Physitian called to cure the sick Patient, ought diligently to consider, whether those things that are in him, or appear to be in him, be like or unlike, that is, whether the Patient be like himself and his own nature in all his parts and functions, temperature, composure and union; that he may preserve those which are yet contained in the bounds of nature, and restore those that are gone astray. Which thing *Galen* hath also confirmed, specially where he saith, he must wel know the nature and structure or composure of the bones, who takes upon him to restore them broken or dislocated to themselves and their proper seats or places. Moreover seeing that healing doth not only consist in the knowledg of the disease, but as well in prescribing fit medicines and like application of them to the body and the parts thereof, all which by their naturall dissimilitude, do require unlike medicines, according to *Galens* opinion: I prethe tell mee, who can perform this, which is ignorant of the description of the whole and the parts thereof, taught by Anatomy? We may say the like of the Apothecary, who ignorant of the situation of the parts in the body cannot apply Emplaisters, Ointments, Cataplasms, Fomentations, Epithemes, bags to the fit places, as to the sutures of the skull, to the Heart, Liver, Stomach, Spleen, Reins, Wombe or Bladder. For example, let us imagine the Liver to be troubled with a hot distemperature, but on the contrary, the stomach with a cold (which commonly happens, seeing the Liver hotter than it ought to be, sends up many vapours to the head; from whence cold humors fall into the stomach) if hot things to be applied to the stomach by the Physitians prescription, be by the Apothecary making no difference, applied both to the stomach and neighboring Liver (which may chance if he be ignorant that the stomach bends somewhat to the left side under the breast-blade; but the liver so takes up the right side of the body that with a great part thereof, it covers almost all the stomach) will not he much offend by increasing the hot distemper of the liver, and not thereby giving ease, or help to the disease? Shall not by this his ignorance, the Patient be frustrated of his desire, the Physitian of his intent, and the medicine of its effect? By these examples I think it most manifest, that the Anatomicall knowledg of the parts of the body is exceeding necessary to all Physitians, Chirurgeons, and Apothecaries, who will practise Physick with any praise to the glory of God, and the benefit and good of man, for whose sake we have writ these things, and illustrated them by figures, subjecting the parts to the eye, and fitly put them in their proper places.

*Initio lib. de Offic. medici.*

*Lib. de ossibus.*

*1. de loc. affect. & lib. 3. Meth.*

Why when the liver is hot the stomach is commonly cold.

The Knowledg of Anatomy, is commodious four manner of wayes.

But Anatomy is commodious four manner of wayes; the first is, because thus we are led to the knowledg of God the Creator, as by the effect to the cause; for as we read in St. *Paul*, The invisible things of God are made manifest by the visible. The second is, that by means hereof we know the nature of mans body, and the parts thereof, whereby we may more easily and certainly judg and determine of sickness and health. The third is, that by the knowledg of the body and its parts, and together therewith its affections and diseases, we may prognosticate what is to come, and foretell the events of diseases. Lastly, the fourth is, that considering the nature of the diseased part, we may fitly prescribe medicines, and apply them in their due places.

There is a threefold method.

Now we must declare in what order Anatomy may be fitly delivered; but first we must observe there is a threefold Method; The first is called of Composition, being very commodious for the teaching of Arts, which *Aristotle* hath used in his Works of *Logick*, and naturall Philosophy, the order and beginning taken from the least and most simple to the more compound. The second of Division, fit for the inventing or finding out of sciences. *Galen* hath followed this order in his Books of Anatomicall Administrations,

and

and of the uſe of the parts. The third of Definition, which ſheweth the nature and eſſence of things, as appears by *Galen* in his Book *De Arte Parva*. And becauſe this order doth alſo proſecute the diviſions, therefore it is commonly accuſtomed to be comprehended in the compaſs of the ſecond. Therefore I will follow this in my Anatomicall Treatiſe, dividing mans body into its parts, which I will not only ſubject to the eye in the way of knowing them, but alſo to the mind in the faithfull underſtanding them. For I will adjoyn thoſe things that are delivered of them by *Galen* in his Book of Anatom. Adminiſtrations, with thoſe which he hath taught in his Books of the uſe of the parts. For there he fitly laies the parts of mans body before our eyes, to the ſenſe. But here he teaches to know them, not to ſee them; for he ſhews why, and for what uſe they are made. Having briefly handled theſe things, we muſt declare what Anatomy is; that as *Cicero* ſaith out of *Plato's Phædro*, it may be underſtood of what we diſpute. And becauſe we attain that by definition (which is a ſhort and plain ſpeech, conſiſting of the *Genus* and difference of the things defined, being the eſſentiall parts, by which the nature and eſſence of the thing, is briefly and plainly explained) firſt we define Anatomy, then preſently explain the particular parts of the definition.

The Authors intent.

Wherefore Anatomy, (if you have regard to the name) is a perfect and abſolute diviſion, or artificiall reſolution of mans body into its parts, as well generall as particular, as well compound as ſimple. Neither may this definition ſeem illegitimate, ſpecially amongſt Phyſitians and Chirurgeons. For ſeeing they are Artizans humiliated to the ſenſe, they may uſe the proper and common qualities of things for their eſſentiall differences and forms. As on the contrary, Philoſophers may refuſe all definitions as ſpurious, which conſiſt not of the next *Genus* and the moſt proper, and eſſentiall differences. But ſeeing that, through the imbecillity of our underſtanding, ſuch differences are unknown to us, in their places we are compelled in defining things, to draw into one many common and proper accidents, to finiſh that definition which we intend, which for that cauſe we may more truly call a deſcription, becauſe for the matter and eſſentiall form of the thing, it preſents us only the matter adorned with crrtain accidents. This appears by the former definition, in wich *Diviſion* and *Reſolution* ſtand for the *Genus*, becauſe they may be parted into divers others, as it were into *ſpecies*. That which is added over and beſides, ſtands in place of the difference, becauſe they ſeparate and make different the thing it ſelf from all other raſh and unartificiall diſſections. We muſt know an artificiall diviſion, is no other than a ſeparation of one part from another, without the hurt of the other, obſerving the proper circumſcription of each of them; which if they periſh or be defaced by the diviſion, it cannot be ſaid to be artificiall; and thus much may ſuffice for the parts of the definition in generall.

What Anatomy is.

How a definition differs from a deſcription.

For as much as belongs to the explication of each word; we ſaid *of Mans body*, becauſe as much as lies in us, we take care of, preſerve the health, and depell the diſeaſes thereof, by which it may appear that mans body is the ſubject of Phyſick, not as it is mans, or conſiſts of matter and form, but as it is partaker of health and ſickneſs.

The ſubject of Phyſick.

We underſtand nothing elſe by a part, according to *Galen*, than ſome certain body, which is not wholly disjoined, nor wholly united with other bodies of their kinds; but ſo that, according to his opinion, the whole being compoſed therewith, with which in ſome ſort it is united, and in ſome kind ſeparated from the ſame, by their proper circumſcription. Furthermore by the *parts in generall*, I underſtand the head, breaſt, belly, and their adjuncts. By the particular parts of thoſe, I underſtand, the ſimple parts, as the ſimilar, which are nine in number, as a griſtle, bone, ligament, membrame, tendon, nerve, vein, arterie, muſculous fleſh; ſome add fibers, fat, marrow, the nails and hairs; other omit them as excrements; but we muſt note that ſuch parts are called ſimple, rather in the judgment of the ſenſe, than of reaſon. For if any will more diligently conſider their nature, they find ſhall none abſolutely ſimple, becauſe they are nouriſhed, have life and ſenſe, either manifeſt or obſcure, which happens not without a nerve, vein, and artery.

*Gal. lib. 1. de uſus part. lib. 1. Meth.*

The ſimilar parts are nine.

But if any ſhall object, that no nerve is communicated to any bone, except the teeth; I will anſwer, that nevertheleſs the bones have ſenſe by the nervous fibers, which are communicated to them by the *Perioſteum*, as by whoſe mediation the *Perioſteum* is connext to the bones, as we ſee it happens to theſe membranes, which involve the bowels. And the bones, by this benefit of the animall ſenſe expell the noxious and excrementitious humors from themſelves into the ſpaces between them and the *Perioſteum*, which as indued with a more quick ſenſe, admoniſheth us, according to its office and duty, of that danger which is ready to ſeiſe upon the bones, unleſs it be prevented. Wherefore we will conclude according to the truth of the thing, that there is no part in our body ſimple, but only ſome are ſo named and thought, according to the ſenſe; although alſo otherwiſe ſome may be truly named ſimple, as according to the peculiar and proper fleſh of each of their kinds. Thoſe parts are called compound which are made or compoſed by the mediation, or immediately of theſe ſimple, which they term otherwiſe organicall, or inſtrumentall; as an arm, leg, hand, foot, and others of this kind.

How the bones come to feel.

The compound, or organicall parts.

And here wee muſt obſerve, that the parts are called ſimple and ſimilar, becauſe they cannot be divided into any particles but of the ſame kind; but the compound are called

dissimilar from the quite contrary reason. They are called instrumentall and organicall, because they can perform such actions of themselves, as serve for the preservation of themselves and the whole; as the eye of it self, without the assistance of any other part, seeth, and by this faculty defends the whole body, as also it self. Wherefore it is called an instrument or organe, but not any part of it, as the coats, which cannot of it self perform that act.

Four particles to be observed in each organicall part.

Whereby we must understand, that in each instrumentall part we must diligently observe four proper parts. One by which the action is properly performed, as the Crystalline humor in the eye; another without which the action cannot be performed, as the nerve and the other humors of the eye. The third, whereby the action is better and more conveniently done, as the tunicles and muscles. The fourth, by which the action is preserved, as the eye-lids and circle of the eye. The same may be said of the hand, which is the proper instrument of holding; for it performs this action, first, by the muscle, as the principall part; Secondly, by the ligament, as a part without which such action cannot be performed; Thirdly, by the bones and nails, because by the benefit of these parts, the action is more happily performed; Fourthly, by the veins, arteries and skin, for that by their benefit and use, the rest, and so consequently the action it self is preserved.

Four sorts of instrumentall parts.

But we must consider, that the instrumentall parts have a fourfold order. They are said to be of the first order, which are first and immediately composed of the simple, as only the authors of some one action, of which kinds are the muscles and vessels. They are of a second which consist of these first simple, and others besides, as the fingers. They are counted of the third rank, which are composed of parts of the second order and some besides, as the hand taken in generall. The fourth order is the most composed, as the whole body, the organ and instrument of the soul. But you must observe, that when we say the muscles and vessels are simple parts, we refer you to the sense and sight, and to the understanding, comparatively to the parts which are more compound; but if any consider their essence and constitution, he shal understand they are truly compound, as we said before. Now it remains, that we understand,

Nine things to be considered in each part.

that in each part, whether simple or compound, nine things are to be considered, as substance, quantity or magnitude, figure, composition, number, connexion, (by which name, we also understand the originall and insertion) temperature, action, and use; that by the consideration of these things, every one may exercise the art of Physick, in preserving health, curing diseases, or foreseeing their events and ends.

Why the three principall parts are so called.

But also we must note, that of the organicall parts, there be three, by whose power the body is governed; which for that cause they call regent and principall, because they govern all the rest; they are the liver, heart, and brain. But they are called principall, not only, because they are necessary for life, (for the stomach, wind-pipe, lungs, reins, bladder, and such like parts perhaps are equally as necessary for life) but because from each of these three, some force, power, and faculty, or also matter necessary for the whole body, flow over all the body, when no such thing proceeds from the rest of the parts. For from the liver a matter fit for nourishment, is distributed by the veins through all the body; from the heart the vitall force diffused by the arteries, imparts life to the whole body; from the brain by the nerves a power or faculty is carried through all the parts of the body, which gives them sense and motion.

*Lib. de Arte medica.*

*Galen* would have the Testicles to be of this kind, not for the necessity of the individuall, or peculiar body, but for the preservation of the *Species* or kind. And moreover in his book *de Semine* comparing the Testicles with the Heart, hee makes them the more noble by this reason, that by how much it is better to live wel and happily, than simply and absolutely to live, by so much the testicles are more excellent than the heart, because with them we may live well & pleasantly, but with this simply live, as we see by the example of Eunuches, and such as are gelt, by which the Testicles seem rightly to be accounted amongst the principal parts; for nature seeing it desired, that this its work should be immortal, for the attaining of that immortality which it intends, frames those parts, like as prudent founders of a City, who do not only procure to furnish their City with many Inhabitants, so long as they are in building it, but also that it may remain in the same state and condition for ever, or at

The use and function of the parts serving for generation.

least for many ages. And yet notwithstanding of so many cities built in the first memory of man, there remains none, whose fame and state, together with the builders name, is not decayed and perished. But this humane work of nature, stands yet secure for this many thousand of years, and shal endure hereafter, because it hath found a way, by which every one may substitute another in his place before he depart. Hence it is that all creatures have members fit for generation, and pleasures inserted in those members, by which they might be inticed to mutuall embraces and copulations. But the mind, which hath dominion over those members hath an incredible desire of propagating the issue, by which also brute beasts incited, desire to propagate their kinds for ever. For seeing that nature understands all these her works considered particularly by themselves, are frail and mortall, it hath done what it could to recompence that fatall necessity of dying, by a perpetuall succession of individualls.

Hitherto we may seem to have aboundantly shewed what necessity of knowledg in Anatomy belongs to all Artizans in Physick, and also what order is to be observed in the same.

ſame. And laſtly, how it is defined, and the reaſon of the parts of the definition. Wherefore it remains that we proſecute what we have taken in hand: which is, that we ſhew and declare how to know all and every the parts of mans body, how many, and what they be, and to underſtand wherefore they be. For although the true knowledg of Anatomy may be perfected by the ſight of the ey, and touching and handling each part with the hand; yet nevertheleſs the labor of deſcribing Anatomy is not unprofitable. For by reading, ſuch as have often exerciſed themſelves in the diſſecting of mens bodies, may refreſh and help their memories, and ſuch as have not, may make plain and eaſie the way to the underſtanding of diſſections.

## CHAP. I.

### *The diviſion or partition of mans Body.*

BY reaſon the partition of Mans body can hardly be underſtood, if the diſtinction of the proper faculties of the ſoul be not underſtood, for whoſe cauſe the body enjoys that form (which we ſee) and diviſion into divers inſtruments; Therefore I thought good in few words to touch that diſtinction of the faculties of the ſoul, for the better underſtanding of the partition of the body which we intend. Wherefore the ſoul, the perfection of the body, and beginning of all its functions, is commonly diſtinguiſhed, and that in the firſt and generall diviſion, into three faculties, which are the Animall, Vitall, and Naturall. But the Animall is divided into the principall, ſenſitive, and motive; Again the Principall is diſtinguiſhed into the imaginative, reaſonable, and memorative: And the Senſitive into ſeeing, hearing, ſmelling, taſting, and touching: But the Motive into progreſſive and apprehenſive. And the Vital is divided into the dilative and contractive faculty of the heart and arteries, which we know or underſtand by the pulſifick faculty. But the Naturall is parted into the nutritive, auctive, and generative faculties; which three perform their parts by the help and miniſtery of five other faculties, which are, the attractive, retentive, concoctive, aſſimilative, and expulſive.

What the ſoul is, and with how many faculties it is endued.

After the ſelf-ſame manner, the organ or inſtrument of the ſoul, to wit, Mans body, at the firſt diviſion is diſtinguiſhed into three parts, which from their office they call Animall, Vitall, and Naturall. Theſe again, according to the ſubdiviſion of the ſubalternall faculties, are divided particularly into other parts; ſo that any one may know the organ of each faculty, by the property of the function. For while other Anatomiſts divide mans body into four univerſall and chief parts, they diſtinguiſh from the three firſt, thoſe which they call the Extremities; neither do they teach to what rank of the three prime parts each extremity ſhould be reduced. From whence many difficulties happen in reading the writings of Anatomiſts; for ſhunning whereof, we will proſecute, as we have ſaid, that diſtinction of mans body, which we have touched before.

All the parts of mans body are diſtinguiſhed into three.

Wherefore, as we ſaid before, mans body is divided into three principall and generall parts, Animall, Vitall, and Naturall. By the Animall parts, we underſtand not only the parts pertaining to the head, which are bounded with the crown of the head, the coller-bones, and the firſt *Vertebra* of the breaſt, but alſo the extremities, becauſe they are organs and inſtruments of the motive faculty; *Hippocrates* ſeems to have confirmed the ſame, where he writes; Thoſe who have a thick and great head, have alſo great bones, nerves, and limbs. And in another place he ſaith, thoſe who have great heads, and when they ſtoop ſhew a long neck, ſuch have all their parts large, but chiefly the Animall. Not for that *Hippocrates* would therefore have the head the beginning and cauſe of the magnitude and greatneſs of the bones and the reſt of the members; but that he might ſhew the equality and private care or government of nature, being moſt juſt and exact in the fabrick of mans body, as if ſhe hath well framed the head, it ſhould not be unlike that ſhe idly or careleſly neglected the other parts which are leſs ſeen. I thought good to dilate this paſſage, leſt any might abuſe that authority of *Hippocrates*, and gather from thence, that not only the bones, membranes, ligaments, griſles, and all the other animall parts, but alſo the veins and arteries depend on the head as the originall. But if any obſerve this our diſtinction of the parts of the body, he will underſtand we have a far other meaning.

What parts are here called Animall.

Lib. 6 Epidem.

By the Vitall parts, we underſtand only the heart, arteries, lungs, winde-pipe, and other particles annexed to theſe. But by the Naturall, we would have all thoſe parts underſtood which are contained in the whole compaſs of the *Peritonæum* or Rim of the body, and the proceſſes of the *Erythroides*, the ſecond coat of the Teſticles. For as much as belongs to all the other parts, which we call containing; they muſt be reckoned in the number of the Animall, which notwithſtanding, we muſt thus divide into principall, ſenſitive, and motive; and again, each of theſe in the manner following. For firſt, the principall is divided into the imaginative, which is the firſt and upper part of the brain, with its two ventricles and other annexed particles; into the reaſoning, which is a part of the brain, lying under the former, and (as it were) the top thereof with its third ventricle; into the memorative, which is the *cerebellum* or afterbrain, with a ventricle hollowed in its ſubſtance. Secondly, the Senſitive is parted into the viſive, which is in the eys; the auditive, in

What parts are called Vitall.

The diviſion of the animall parts.

the ears; the ſmelling, in the noſe; the taſting, in the tongue and palate; the tactive, or touching which is in the body, but moſt exquiſite in the skin which inveſts the palms of the hands. Thirdly, the motive is divided into the progreſſive, which intimates the legs, and the comprehenſive, which intimates the hands. Laſtly, into ſimply motive, which are three parts, called bellies, for the greateſt part terminating and containing; for the vitall, the inſtrument of the faculty of the heart, and dilatation of the arteries, are the direct or ſtreight fibers, but of the conſtrictive the tranſverſe; but the three kinds of fibers together, of the pulſifick; or if you pleaſe you may divide them into parts ſerving for reſpiration, as are the lungs, and weazon, and parts ſerving for vitall motion, as are the heart and arteries, furniſhed with theſe fibers, which we formerly mentioned. The diviſion of the naturall parts remains, which is into the nouriſhing, auctive and generative, which again are diſtributed into attractive, univerſall, and particular; retentive, concoctive, diſtributive, aſſimilative, and expulſive. The attractive, as the gullet and upper orifice of the ventricle; the retentive, as the *Pylorus* or lower paſſage of the ſtomach; the concoctive, as the body of the ventricle, or its inner coat; the diſtributive, as the three ſmall guts; the expulſive, as the three great guts; we may ſay the ſame of the liver, for that draws by the meſaraick and gate veins, retains by the narrow orifices of the veins diſperſed through the ſubſtance thereof, it concocts by its proper fleſh; diſtributes by the hollow vein, expels by the ſpleen, bladder of the gall and kidnies. We alſo ſee the parts in the teſticles divided into as many functions; for they draw by the preparing veſſels; retain by the various crooked paſſages; in the ſame veſſels they concoct the ſeed by the power of their proper ſubſtance and faculty; they diſtribute by the ejaculatory, at the glandules called *Proſtatæ*, and the horns of the wombe, ſupplying the place of proſtates; Laſtly, they expell or caſt forth by the proſtates, horns, and adjoining parts. For as much as belongs to the particular attraction, retention, concoction, diſtribution, aſſimilation of each part, that depends of the particular temper, and as they term it, occult property of each ſimilar and ſimple part. Neither do theſe particular actions differ from the univerſall, but that the generall are performed by the aſſiſtance of the three ſorts of fibers, but the ſpecial by the ſeverall occult property of their fleſh, ariſing from their temperature, which we may cal a ſpecifick property. Now in the compoſition of mans body, nature principally aims at three things. The firſt is, to create parts neceſſary for life, as are the heart, brain, and liver. The ſecond, to bring forth other for the better & more commodious living, as the eyes, noſe, ears, arms and hands. The third is, for the propagation and renewing the *ſpecies* or kind, as the privie parts, teſticles, and wombe. And this is my opinion, of the true diſtinction of mans body, furniſhed with ſo many parts, for the performance of ſo many faculties; which you, if you pleaſe, may approve of and follow. If not, you may follow the common and vulgar, which is, into three bellies, or capacities, the upper, middle, lower, (that is, the head, breſt and lower belly) and the limbs or joints. In which by the head we do not underſtand all the Animall parts, but only thoſe which are from the crown of the head to the firſt *vertebra* of the neck, or to the firſt of the back, if according to the opinion of *Galen*, *Lib. de oſſibus*, where he makes mention of *Enarthroſis* and *Arthrodia*, we reckon the neck amongſt the parts of the head. By the breſt, whatſoever is contained from the coller bones to the ends of the true and baſtard, or ſhort ribs, and the midriffe. By the lower belly, the reſt of the trunck of the body, from the ends of the ribs to the ſhare-bones; by the limbs, we underſtand the arms and legs. We will follow this diviſion in this our Anatomicall diſcourſe, becauſe we cannot follow the former in diſſecting the parts of mans body, by reaſon the Animall parts are mutually mixed with the vitall and naturall, and firſt of the lower belly.

The diviſion of the vitall parts.

The diviſion of the naturall parts.

The vulgar diviſion of mans body.

Nature would not have this lower belly bony, becauſe the ventricle might be more eaſily dilated by meat and drink, children might grow the better, and the body be more flexible. It is convenient we begin our Anatomical adminiſtration from this, becauſe it is more ſubject to putrefaction than the reſt, both by reaſon of its cold and moiſt temperature, as alſo by reaſon of the feculent excrements therein contained. Yet before we go any further, if the Anatomicall adminiſtration muſt be performed in publick, the body being firſt handſomely placed, and all the inſtruments neceſſary for diſſection made ready, the belly muſt be divided into its parts, of which ſome contain, and other ſome are contained.

Why the belly is not bony.

They are called containing, which make all that capacity which is terminated by the *Peritoneum* or Rim of the belly. The upper part whereof is bounded by *Galen* within the compaſs of the direct muſcles, and by a generall name is called *Epigaſtrium*, or the upper part of the lower belly. That again is divided into three parts, that is, into that which is above the navil, and which carries the name of the whole, into that which is about the navil, and is called the umbilicall or middle part; and laſtly, into that which is below the navill, called the *Hypogaſtrium*, or the lower part of the lower belly.

The diviſion of the lower belly.

In every of which three parts there be two laterall, or ſide parts to be conſidered, as in the *Epigaſtrium*, the right and left *Hypochondria*, which are bounded above and below, in the compaſs of the midriffe, and the ſhort ribs. In the umbilicall the two *Lumbares* (ſome call them *Latera* ſides) which on both ſides from the loweſt parts of the breſt, are drawn to the flanks or hanch-bones; in the *Hypogaſtrium*, the two *Ilia*, or flanks, bounded with

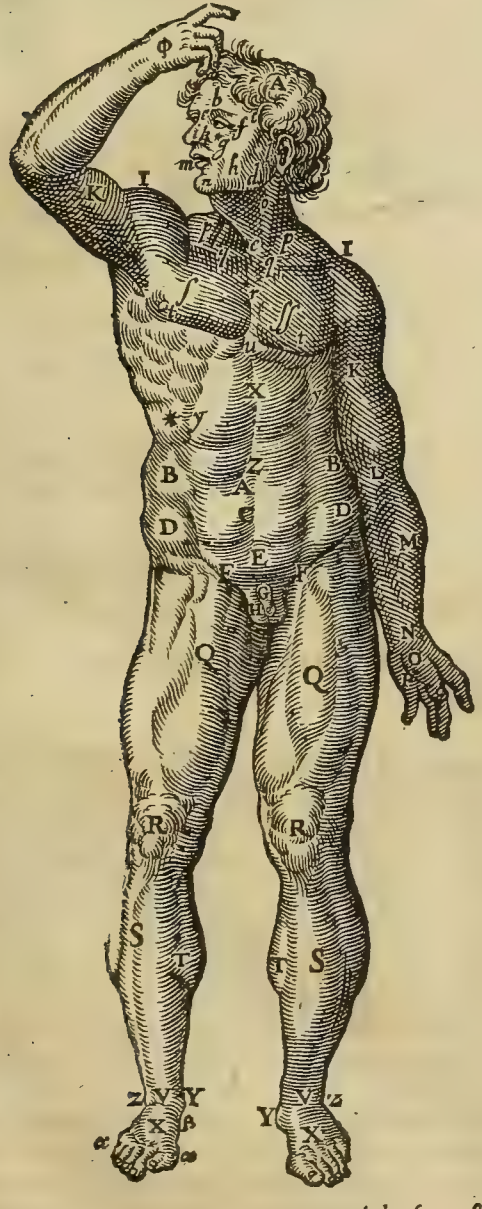
The *Hypochondria*.

with the hanch and ſhare-bones. Neither am I ignorant, the *Ilia*, or flanks, which the Greeks call Λαγόες ſignifie all the empty parts, from the ends of the ribs, even to the hanch-bones, whereupon they alſo call them Κενεῶνες, as if you ſhould ſay empty ſpaces, becauſe they are not encompaſſed with any bone. Yet I thought good that this doctrine of dividing the belly ſhould be more diſtinct, to call the parts which are on each ſide the navell *Lumbares*, and thoſe on the lower part of the lower belly *Ilia*, flanks. But we muſt obſerve that the Ancients have been ſo diligent in deciphering the containing parts, that as exactly as might be, they deſigned the bowells contained in the belly, which being divers lie in ſundry places; for the greater portion of the liver lies under the right *Hypochondrium*; under the left almoſt all the ventricle and ſpleen. Under the *Epigaſtrium* the lower orifice of the ventricle, and the ſmaller portion of the liver; In the *Lumbares*, or ſides, in the right and upper part the right kidney, in the lower part towards the flanck, the blind gut; in the middle part thereof the colick and empty guts. In the upper part of the left ſide lies the left Kidney, in the middle part, the reſt of the empty and colick guts. Under the region of the navell, lies the girdle or upper part of the kall, the colick gut thruſting it ſelf alſo through that way. Under the *Ilia*, or flanks, the right and left, lie the greater part of the gut Ileon, the horns of the women big with child, and the ſpermatick veſſels in men and women. Under the *Hypogaſtrium* in the lower part lies the right, or ſtrait gut, the bladder, womb, and the reſt of the kal.

If we know, and well underſtand theſe things, we ſhall more eaſily diſcern the parts affect by the place of the pain, and cure it by fit application of remedies, without the hurting of any part. The diſtinction of ſuch places, and the parts in thoſe places, as ſeeming moſt profitable, I have thought good to illuſtrate by the placing theſe two following figures, in which thou haſt deciphered, not only the foreſaid parts, containing, and contained, but alſo of the whole body, and many other things which may ſeem to conduce to the knowldge of the mentioned parts. The Figures are theſe.

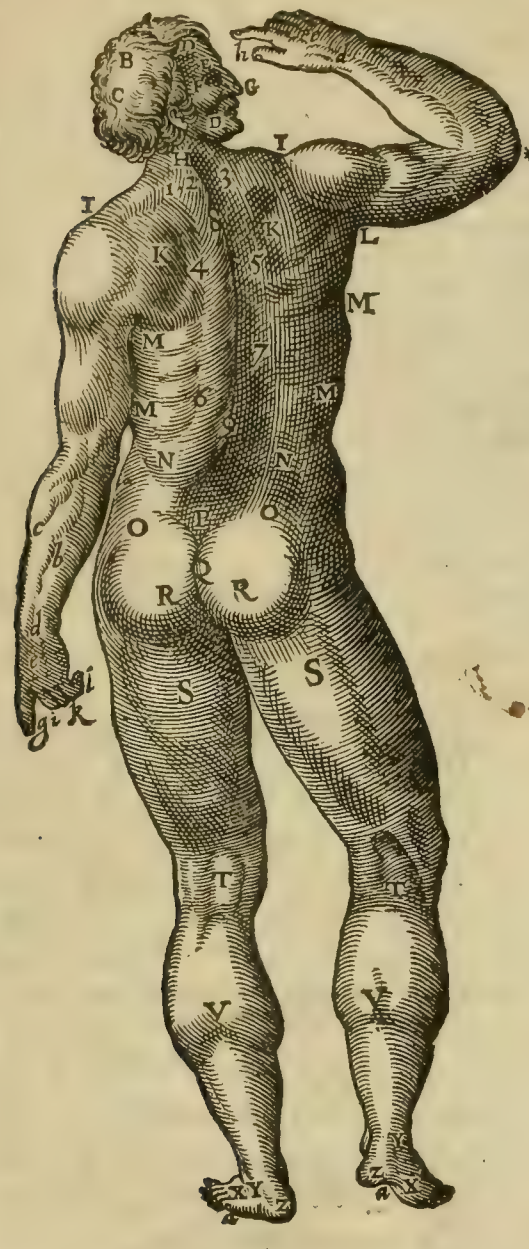
A moſt certain note of the part affected by the place where the pain is.

*The Figure ſhewing the foreparts of the body.*



*A* The hairy Scalp, cald τριχωτὸς.
*b* the forehead cald *Frons* μέτωπον.
*c* the temples cald *tempora*, κρόταφοι
From *b* to *d* The compaſs of the face.
*e* The greater or inward corner of the eyes, cald *Canthus internus*.
*f* The leſſer or externall angle of the eye, cald *Canthus externus*.
* The lower eybrow which is immovable, *Palpebra*.
*g* The cheek-bal cald *mala*, μῆλα.
*h* The cheek-puf cald *bucca*, γνάθος.
*i* The ridg of the noſe cald *Naſus externus*, ῥὶν.
*k* The noſthrils cald *nares*, μυκτῆρες.
*l* The outward ear, *auris externa*.
*m* The mouth made of the two lips, *Os*.
*n* The chin called *mentum*, γένειον.
*o* The neck, *collum*, αὐχὴν and τράχηλος.
From *o* to *e* the pillar of the neck, *truncus* and ὄλμος.
*pp* The hollow of the neck, called *juguli*, σφαγαὶ.
*qq* The patel bones, *claves*, κλεῖδες.
*r* The cheſt, *pectus*, στέρνον.
*ſ* The right breſt.
*ſſ* The left breſt: to this Region we apply cordiall *Epithemations* moiſt and dry.
*tt* The nipples of the breſts, *papillæ*, θηλὸν.
*u* The trench of the heart which the Ancient called καρδία. The Latines *ſcrobiculus Cordis*. This part is anointed for the mouth of the ſtomach
From *u*. to *e*. the lower belly, γαστὴρ.
X The *Epigaſtrium* or upper part of the lower belly.
*yy* The *Hypochondria* or *Præcordia*.
* The outward Liver-remedies are applied to this place.
*z* The region of the navill, called *umbilicalis*, or the middle part of the lower belly.
*A*. The navill *umbilicus*. The root of the belly ὄμφαλος.
BB. The ſide *Latera*, πλευρὰς. and in our Author *Lumbi ſeu Lumbaris regio*.
C. *Hypogaſtrium*, the water-courſe, *Aqualiculus*, the lower part of the lower belly, ἦτρον.
DD. The flanks called *Ilia*, and κενεῶνες.
E. The Groin called *pubes* or *pecten*, κτεὶς καὶ ἥβη.
FF. The Leske cald *inguen* where thoſe tumors are cald *Bubones*.
G. The yard with the fore-skin, *penis cum præputio*.
H. The ſtones or teſticles, with the cod or *ſcrotum*.
II. The ſhoulders, *humeri*, ἐπωμίδες.
KK. The arms *Brachia*, βραχίωνα.
L. The bowt of the arm, called *Gibber*, ἀγκὼν.
M. The outſide of the lower part of the arm called *cubitus*, πῆχυς.
N. The wriſt called *Brachiale*, κάρπος.
O. The after wriſt *poſtbrachiale*, μετακάρπιον.
P. The Palm called *Palma* or *vola manus*, θέναρ.
φ The back of the hand, *Dorſum manus*, ὀπισθέναρ.
QQ. The fore and middle part of the thigh, where we apply cupping glaſſes to bring down womens courſes. μηρὸν.
RR. The knee, *genu*. γόνυ.
SS. The leg, *tibia*, κνήμη.
TT. The calf of the leg, *ſura*, γαστροκνήμον.
VV. The inſtep, *tarſus*.
XX. The top of the foot, *Dorſum pedis*, στῆθος ποδὸς.
YY. The inner Anckles, σφυρὸς.
ZZ. The outward anckles, αα the toes of the feet, β the place under the inward anckle, where the vein called *Saphena* is opened.

*The figure of the back-parts of a Man.*



A. The forepart of the head, *ſinciput*, βρεγμα.
B the top or crown of the head, *vertex*, κορυφη
C. the hinder-part of the head, *occiput*, κοπις και ἰνιον.
From D. to D. the face, *facies*, προσωπον.
*E. the eybrows, *ſupercilia*, ὀφρυς.
F. the upper eylid, βλεφαρον.
G. the tip of the noſe, called *globulus naſi*.
H. the back-part of the neck, called *cervix*, αὐχην, and the nuke or nape of the neck. There is a hollowneſs at the top of this *cervix*, where we apply Seatons.
I. the back part of the ſhoulder top, called *axilla*, ὠμος.
KK. the ſhoulder blades, *ſcapulæ*, ὠμοπλατα.
1,2,3. On this place we ſet Cupping-glaſſes.
4,5,6,7. the back, *dorſum*, νωτον.
8, 9. the ridg, *ſpina dorſi*. ῥαχις.
L. the armhole, *ala*, μασχαλη.
* The elbow, *gibber brachii*.
M M M M. the ſides, *latera*.
N N. the loins, *lumbi*, or the region of the kidneys, ὀσφυες.
O O. the place of the hips, *coxendices*, where we apply remedies for the Sciatica.
P. the place of the Holy bone, or *Os ſacrum*, where we apply remedies in the diſeaſes of the right gut.
Q. the place of the rump or *Coccyx*.
R R. the buttocks, *nates*, κλωνες.
S S. the back parts of the thigh, *femen*.
T T. the ham, *poples*, ἰσχυς.
V V. the calf of the leg, *ſura*.
X X. the foot, or *parvus pes*, πους.
Y Y. the utter ankle, *malleolus externus*.
Z Z. the heel, *calx*, or *calcaneus*, πτερνα.
a a. the ſole of the foot, *planta pedis*, κοιλον τοῦ ποδος.
*b*. the in ſide of the lower part of the arm, called *ulna*, ὠλενη.
*c*. the ou ſide of the ſame, *cubitus*, πηχυς.
*d d*. the wriſt, *carpus*.
*e e*. the back-part of the hand, *dorſum manus*, *g*. the forefinger, *index*, δειχτηρ. *h*. the thumb, *pollex*, ἀντιχειρ.
*i*. the middle finger, *medius*, μεσος.
*k*. the ring finger, *annularis*, *medicus*, ἰατρικος.
*l*. the little finger, *auricularis*, *minimus*, ὠτιτης.

## CHAP. II.

### *Of the containing parts of the Epigaſtrium, and the preparation to Anatomicall adminiſtration.*

The containing parts of the lower belly.

THe containing parts of the *Epigaſtrium*, are the *Epidermis*, or thin outward skin; the true skin; the fleſhy or fatty Pannicle; the eight muſcles of the *Epigaſtrium*, with their common coat; the Rim of the belly; the five vertebra's of the loins; all the holy-bone; the hanch-bone; ſhare-bone; the white line and midriff. Of theſe parts, ſome are common to the whole body, as the three firſt; the other proper to the parts contained in the *Epigaſtrium* taken in generall. Which that you may ſee in their order, firſt you muſt cut round about the navell, to the upper ſuperficies of the muſcles, that ſo we may keep it, till ſuch time, as occaſion ſhall offer it ſelf, to ſhew the umbilicall veſſels lying in that place, which are one vein, two arteries, and the *Urachus* (if it be there.) Which being done, you muſt draw a ſtreight line from the cheſt, over the breſt-blade, even to the ſhare-bone, which may divide the common-containing parts, even to the white line.

Then preſently it will be convenient to draw two other lines acroſs or overthwart, of the like depth on each hand, from the circumference of the navell, even to the ſides, that ſo on each part we may draw the skin more commodiouſly from the parts lying under it; the ſight of which otherwiſe it would hinder. Theſe things being done, the skin muſt be

be divided from the parts lying under it from the designed circumference left about the navell. We must teach how the skin is twofold, the true and false, and render a reason of the name, which we will every where do, as far as the thing will suffer, and it shall lye in our power. And in doing or examining these things, it will be convenient diligently to enquire into the nine things mentioned in the Preface. We will begin with the Skin, because that part is first obvious to our senses.

## CHAP. III.

### *Of the utmost Skin or Cuticle.*

THE skin being the first part, and spred over all the body, is twofold, that is, the true and bastard skin: The true is called by the Greeks, *Derma*, which may almost every where be pulled from the parts lying under it, which it invests; except in the face, ears, the palms of the hands, soles of the feet, fingers, and privities, where it sticks so close that it cannot be separated.

The skin twofold

From what parts the skin cannot be separated.

The bastard (which first of all we will declare, because it first presents it self to our sight) is by the Greeks called *Epidermis*, because it covers the true skin, they term it commonly the Cuticle. The substance of it is excrementitious, and (as it were) a certain dry flouring, or production of the true skin. That it draws not its substance from the seed is apparent by this, that as it is easily lost, so it is easily repaired, which happens not in parts truly spermaticall. This utmost thin skin, or Cuticle, may two manner of ways be made apparent by it self, and separated from the other, as by burning with fire, or ardent heat of the Sun, (in some delicate bodies, and such as are not accustomed to be conversant in Sunshine.) The quantity in thickness is very small, but the extent is most large, because it covers all the skin; the figure of it is round, and long, like those parts which it invests. The composure of it is obscure; yet because this Cuticle is the excrement of the true skin; we say it hath its matter from the excrementitious superfluity of the nerves, veins, arteries, and substance of the true skin.

The matter of the Cuticle.

The quantity.

The figure.

The composure.

It is in number one, like as the true skin which it outwardly covers, that it might be a *medium* between the object and fixed faculty of touching, diffused over all the true skin, which every where lies under it. For the temperature, by the common consent of Physitians, it is in the midst of all excess; for that seeing it is the *medium* between the object and faculty, if it should be hotter, colder, moister, or drier, it would deceive the faculty by exhibiting all objects, not as they are of themselves, but as it should be; no otherwise than as to such as look through red or green spectacles, all things appear red or green. Wherefore for this reason it was convenient the Cuticle should be void of all sense. It hath no action in the body; but it hath use, for it preserves and beautifies the true skin; for it seems to be given by the singular indulgence of nature, to be a muniment and ornament to the true skin. This providence of Nature, the industry of some Artizans (or rather Curtizans) doth imitate; who for to seem more beautifull, do smooth and polish it. By this you may understand, that not all the parts of the body have action, yet have they their use, because, according to *Aristotles* opinion, Nature hath made nothing in vain. Also you must note that this thin skin or Cuticle being lost, may every where be regenerated, unless in the place which is covered with a scar. For here the true skin being deficient, both the matter and former faculty of the Cuticle is wanting.

The number.

The temperature.

The use.

Why the Cuticle cannot be restored in scars.

## CHAP. IIII.

### *Of the true Skin.*

THE true skin called by the Greeks *Derma*, is of a spermatick substance, wherefore being once lost, it cannot be restored as formerly it was. For in place thereof comes a scar, which is nothing else but flesh dried beyond measure. It is of sufficient thickness, as appears by the separating from the flesh.

The substance.

Magnitude.

But for the extent thereof, it encompasses the whole body, if you except the eys, ears, nose, privities, fundament, mouth, the ends of the fingers where the nails grow, that is, all the parts by which any excrements are evacuated. The figure of it is like the Cuticle, round and long, with its productions, with which it covers the extremities of the parts.

Figure.

It is composed of nerves, veins, arteries, and of a proper flesh and substance of its kind, which we have said to be spermaticall, which ariseth from the process of the secundine, which lead the spermatick vessels even to the navell; in which place each of them into the parts appointed by nature, send forth such vessels as are spred abroad and diffused from the generation of the skin. Which also the similitude of them both, that is, the skin

Composure.

and

and membrane *Chorion* do argue. For as the *Chorion* is double, without ſenſe, encompaſſing the whole infant, lightly faſtened to the firſt coat, which is called *Amnios*; ſo the skin is double, and of it ſelf inſenſible, (for otherwiſe the nerves were added in vain from the parts lying under it) ingirting the whole body, lightly cleaving to the fleſhy Pannicle. But if any object, That the Cuticle is no part of the true skin, ſeeing it is wholly different from it, and eaſily to be ſeparated from it, and wholly void of ſenſe: I will anſwer, theſe arguments do not prevail. For that the true skin is more craſs, thick, ſenſible, vivid, and fleſhy, is not of it ſelf, being rather by the aſſiſtance and admixture of the parts, which derived from the three principall it receives into its proper ſubſtance; which happens not in the Cuticle. Neither if it ſhould happen, would it be better for it, but verily exceeding ill for us, becauſe ſo our life ſhould lye fit and open to receive a thouſand externall injuries, which encompaſs us on every ſide, as the violent and contrary acceſs of the four firſt qualities.

The skin of it ſelf is void of ſenſe.

The number.

There is only one skin, as that which ſhould cover but one body, the which it every where doth, except in thoſe places I formerly mentioned. It hath connexion with the parts lying under it by the nerves, veins, and arteries, with thoſe ſubjacent parts put forth into the skin inveſting them, that there may be a certain communion of all the parts of the body amongſt themſelves.

Connexion.

Temperature.

It is cold and dry in its proper temper, in reſpect of its proper fleſh and ſubſtance, for it is a ſpermaticall part. Yet if any conſider the ſinews, veins, arteries, and fleſhy threds which are mixed in its body, it will ſeem temperate, and placed (as it were) in the midſt of contrary qualities, as which hath grown up from the like portion of hot, cold, moiſt, and dry bodies. The uſe of the skin is to keep ſafe and ſound the continuity of the whole body, and all the parts thereof, from the violent aſſault of all externall dangers; for which cauſe it is every where indued with ſenſe, in ſome parts more exact, in others more dull, according to the dignity and neceſſity of the parts which it ingirts, that they might all be admoniſhed of their ſafety and preſervation. Laſtly, it is penetrated with many pores, as breathing-places, as we may ſee by the flowing out of ſweat, that ſo the arteries in their *diaſtole* might draw the encompaſſing air into the body, for the tempering and nouriſhing of the fixed inbred heat, and in the *ſyſtole* expell the fuliginous excrement, which in Winter ſuppreſt by the cold air encompaſſing us, makes the skin black and rough. We have an argument and example of breathing through theſe, by drawing the air in by tranſpiration, in women troubled with the mother, who without reſpiration live only for ſome pretty ſpace by tranſpiration.

Use.

The reaſon why the skin is blacker and rougher in Winter.

## CHAP. V.

### *Of the fleſhy Pannicle.*

After the true skin, follows the membrane, which Anatomiſts call the fleſhy Pannicle, whoſe nature that we may more eaſily proſecute and declare, we muſt firſt ſhew what a Membrane is, and how many ways the word is taken. Then wherefore it hath the name of the fleſhy Pannicle. A membrane therefore is a ſimple part, broad and thin, yet ſtrong and denſe, white and nervous, and the which may eaſily without any great danger be extended and contracted. Sometimes it is called a coat, which is, when it covers and defends ſome part. This is called the fleſhy Pannicle; becauſe in ſome parts it degenerates into fleſh, and becomes muſculous, as in a man from the coller-bones, to the hair of the head, in which part it is therefore called the broad muſcle, whereas in other places it is a ſimple membrane, here and there intangled with the fat lying under it, from whence it may ſeem to take or borrow the name of the fatty Pannicle. But in beaſts (whence it took that name, becauſe in thoſe a fleſhy ſubſtance maketh a great part of this Pannicle) it appears manifeſtly fleſhy and muſculous over all the body, as you may ſee in Horſes and Oxen; that by that means being moveable, they may drive and ſhake off their flies, and other troubleſome things, by their ſhaking and contracting their backs. Theſe things conſidered, we ſay the fleſhy Pannicle in its proper body, is of a nervous or membranous ſubſtance, as that which hath its originall from the coat *Amnios*, (which is next to the infant) dilated near to the navell, and ſtretched forth for the generation of this Pannicle; in which thing I think good to note, that as the membranes *Chorion* and *Amnios* mutually interwoven with ſmall nervous fibers, encompaſs and inveſt the child as long as it is contained in the womb; ſo the skin and fleſhy Pannicle, knit together by ſuch like bands, engirt the whole body.

What a membrane is.

Why it is ſometimes called a coat, ſometimes the fleſhy and fatty Pannicle.

Why beaſts have this Pannicle wholly fleſhy or muſculous.

The ſubſtance.

The magnitude and figure.

Therefore the fleſhy Pannicle is equal in magnitude and like in figure to the true skin, but that it lyes under it, and is contained in it, in ſome places mixt with the fat, in others increaſed by the fleſh interwoven with it, and in other ſome is only a ſimple membrane.

Number.

Compoſure.

The compoſition of it is ſuch, as the ſight of it preſents to our ey, that is, of veins, arte-

arteries, nerves, and the proper flesh, some whites mixed and interlaced with fat, and sometimes with musculous flesh. It is but one, by reason of the use we shall presently shew; it is situated between the skin and fat, or common coat of the muscles, annexed to these and the other parts lying under it, by the veins, nerves and arteries ascending from these inward parts, and implanting themselves into the substance thereof, and then into the true skin.

The temperature thereof is diverse, according to the variety of the parts interwoven with it. The use of it is, to lead, direct, and strengthen in their passage, the vessels which are disseminated into the true skin, and the whole superficies of the body. But in beasts it hath another commodity, that is, it gives a shaking or trembling motion to their skin and back, for that cause we formerly touched.

The temperature.
The use.

## CHAP. VI.

### *Of the Fat.*

THe Fat coming near the condition of an excrement, rather than of a part (as we said, when we treated of the similar parts) is of an oily substance, bred of the aery and vaporous portion of the blood, which sweating through the pores of the coats, or mouths of the vessels, becomes concrete about the membranes, and nerves, and cold bodies, and turns into fat by the coldness of the place. Whereby we may know, that cold, or a more remiss heat, is the efficient cause of fat, which is manifest by contemplation not only of creatures of divers kinds, but also by those of the same species and sex, if so be that the one be colder than the other.

The Fat is rather an excrement than a part.
The substance.
The efficient cause of Fat.

By which we may understand that the fat is the more or less in quantity, according to the different temper of the whole body, and of its particular parts; for its composition, it consists of that portion of the blood which we formerly mentioned, intermixt with certain membranes, nervous fibers, veins and arteries. The greatest part of it lyes between the fleshy Panniele, and the common coat of the Muscles. * Otherwise it is diffused over all the body, in some places more, in some less, yet it is always about the nervous bodies, to which it delights to cleave. Most Anatomists enquire whether the fat lye above or beneath the fleshy Panniele. But me thinks this question is both impertinent and idle; being we often see the fat to be on both sides. *a* It is of a middle temper, between heat and cold, being it ariseth of the more aery portion of the blood; although it may seem cold in respect of the efficient cause, that is, of cold by which it concretes. For the rest, moisture is predominant in the fat. *b* The use thereof is, to moisten the parts which may become dry by long fasting, vehement exercise, or immoderate heat; and besides to give heat, or keep the parts warm. Although it do this last rather by accident, than of its own nature, as heated by exercise, or by some such other chance; it heats the adjacent parts, or may therefore be thought to heat them, because it hinders the dissipation of the native and internall heat; like as cold heats in winter, whereby the bellies are at that time the hotter. I know some learned Physitians of our time stiffly maintained, that the fat was hot, neither did they acknowledg any other efficient cause thereof, than temperate heat and not cold. But I think it best to leave the more subtil agitation of these questions to naturall Philosophers. But we must note, *c* that at the joints which are more usually moved, there is another sort of Fat, far more solid and hard, than that which we formerly mentioned; often found mixed with a viscid and tough humor like the whites of Eggs, that so it might be sufficient for a longer time to moisten these parts, subject to be hurt by dryness, and make them slippery, and so fitter for motion, in imitation whereof they usually grease hard bodies, which must be in frequent motion, as Coach-wheels and axletrees. And there is another kind of fat, which is called *Sevum*, seam, in one thing differing from the ordinary fat, that is much dryer; the moister and softer portion of the fat being dissipated by the raging heat of the place. For it is found principally about the midriff, where there are many windings of arteries and veins; and it is also about the reins, loins, and basis of the heart. The Fat is wasted by long fasting; is dryed and hardened by vehement exercise and immoderate heat. Hence it is that it is much more compact in the palms of the hands, and soles of the feet, about the eys and heart, so that it resembles the flesh in density and hardness; because by the continuall motion and strong heat of these parts, the thinner portion being dissipated and diffused, the more gross and terrestriall remain.

The quantity.
The compo-sure.
The site.

I was present at the opening of a body, Feb. 1630. in which the fat in the lower part of the lower belly was in thickness above 8 inches, upon the breast between 4 and 5 inches: which I thought good to remember in this place both for the rarity of the thing, as also because it was encreased by report, and the place mistaken, some saying the *Omentum* or Call was so thick, which was false, for it did not much exceed the quantity of that part, in other fat men.

*a* The temper.
*b* The use.
*c* The solider fat, or seame.

In what parts and for what cause the fat is more dease.

## CHAP. VII.

### *Of the common coat of the Muſcles.*

The ſubſtance. NExt under the Fat, appears a certain coat, ſpred over all the Muſcles, and called the common coat of the Muſcles, it is of a nervous ſubſtance, as all other mem-

The quantity. branes are. The quantity and breadth thereof is bounded by the quantity of the Muſcles which it involves, and fits it ſelf to, as that which encompaſſes the Muſcles of the *Epigaſtrium*, is of equal largeneſs with the ſame Muſcles. The figure of it

The compoſure. is round: it is compoſed of veins, nerves, arteries, and its peculiar fleſh conſiſting of three ſorts of fibers; the beginning of it is from the *Perioſtium*, in that part where the bones give ligaments to the Muſcles; or according to the opinion of others, of the nervous and ligamentous fibers of the Muſcles, which riſing up and diffuſed over the fleſhy ſuperficies thereof, are united for the generation of this coat. But this membrane ariſing

The Originall. from the *Perioſtium* (as every membrane which is below the head takes it originall from the *Perioſtium* either primarily, by the interpoſition of no Medium, or ſecondarily) is ſtretched over the Muſcles by their tendons. But if any object, That this membrane pluck'd from the belly of the Muſcle, may ſeem to end in a ligament. I will anſwer, that it is the condition of every nervous part, ſo to binde or faſten it ſelf to another part of his own kinde as to a ſtay, ſo that it can ſcarce be pluck'd from thence. We ſee the proof hereof,

The number. in the *Peritonæum* or Rim in the *Epigaſtrium* or lower part of the lower belly. That which covers the Muſcles of the *Epigaſtrium* is but one, unleſs you had rather part it in two, the right and the left diſtinguiſhed by the interpoſition of the *Linea Alba*, or white Line. It

The ſite. is ſituate betwixt the Fat and Muſcles; for it is faſtened above and below to theſe parts

The uſe. with fibers, which in ſmalneſs and fitneſs exceed the Spiders web. But by its veſſels, it participates with the three principall parts, and is of a cold and dry temper. The uſe of it is, to contain the Muſcles in their naturall union, and to keep them as much as in it lyes, from putrefaction, which may happen to them from *pus* or matter, which is often caſt forth of the ſimilar parts into the empty ſpaces and diſtances of the Muſcles. Wherfore going about to ſeparate the Fat of the *Epigaſtrium* (where thou muſt begin the diſſection of mans body) you muſt have a care that you hurt it not with your knife, but that, before you touch the Muſcles, ſee you artificially take it away, that you may the more eaſily ſeparate the Muſcles

What the white line is. lying under it, diſtinguiſhed by a manifeſt ſpace at the white Line, which is made by the meeting together of the proper coats of all thoſe Muſcles.

## CHAP. VIII.

### *What a Muſcle is, and how many differences there be thereof.*

What a Muſcle is. A Muſcle is the inſtrument of voluntary motion; and ſimple voluntary motion is performed ſix manner of ways, upwards, downwards, forwards, backwards, to the right hand and to the left; but the compound one way, which is circularly,

How the circular motion is performed. the which is performed by the continuall ſucceſſion of the motion of the Muſcles ingirting the part. Such a motion Falconers uſe when they ſtretch forth their hand and lure their Hawk. We have ſome parts, which have motion without a Muſcle, but that motion is not voluntary; ſuch parts be the heart, ſtomach, guts, both the bladders, (that is, that of the gall and that of the urine) and divers other which have the motions of attraction, expulſion and retention, by the means of the three ſorts of fibers; for

From whence the differences of Muſcles are drawn. they draw by the right, expell by the tranſverſe, and retain by the oblique. The differences of Muſcles which are many and diverſe, are taken from their ſubſtance, originall, inſertion into the part which they move, form or figure, holes or openings, magnitude, colour, ſite,

Differences of Muſcles from their ſubſtance kinde of fibers, their conjugation or connexion, heads, bellies, tendons, oppoſition in action and office. Some in ſubſtance are nervous, venous, arterious, becauſe they have manifeſt nerves, veins, and arteries, as the Midriff, the Intercoſtall or Epigaſtrick Muſcles, and many more, and that for their difference from other Muſcles, into which neither nerve, nor vein, or arteries are manifeſtly inſerted, although ſecretly they admit them all for ſenſe and motion, life and nouriſhment; ſuch are the Muſcles of the wriſt, the wormy Muſcles of the hands and feet; for if there be any nerves obſerved in them, they are very ſmall. Some had rather make the difference of Muſcles thus, that ſome of them are fleſhy, ſome nervous,

Differences of Muſcles from their originall. others membranous. From their Originall, ſome ariſe from the bones, as theſe which move the hands, arms, and legs; others from griſles, as the Muſcles of the throat; others from membranes which inveſt the tendons, as the wormy Muſcles of the hands and feet; others from ligaments, as the Extenders of the fingers; others from other Muſcles, as the two lower Muſcles of the yard which proceed from the Sphincter Muſcle of the fundament. Others have no originall, as the membrane which we call the fleſhy Pannicle aſſumes fleſh

in

in certain places, and degenerates into a Muſcle; ſuch are the *Cremaſter* or hanging Muſcles of the teſticles, the large Muſcles of the face, and if you pleaſe the Midriff, as that which is compoſed of two coats, the one encompaſſing the ribs and the *Peritonæum*, hath fleſh in the midſt between the two membranes. And moreover ſome Muſcles have their originall from one only bone, as theſe which bend and extend the Cubit; others ariſe of many bones, as the oblique deſcending, the Dorſall and many Muſcles of the neck, which ariſe together from many ſpondyls and ſides of ſpondyls. There be others, according to the opinion of ſome men, both from the bones and griſles of the *Pubis* at the right or direct Muſcles of the *Epigaſtrium*, yet by their favor I think otherwiſe. Becauſe by the Anatomicall and received axiome, A muſcle is there thought to take his beginning, from whence he receives a nerve; but theſe Muſcles take a nerve from the intercoſtall muſcles, wherefore their originall ought to be referred to the ſides of the breſt-blades, as ſhall be ſhewed in due place. From their inſertion ariſe theſe differences, ſome are inſerted into a bone, as thoſe which move the head, arms and legs; others into a griſle, as thoſe of the Throtle, ey-lids, noſe, and the oblique aſcendent muſcles of the *Epigaſtrium*; ſome into a bone and griſle both, as the right muſcles of the *Epigaſtrium* and the Midriff; ſome into the skin, as the muſcles of the lips; others into the Coats, as the muſcles of the eys; others into Ligaments, as the muſcles of the yard. But theſe differences following may be drawn both from their inſertion and originall. For ſome muſcles ariſing from many parts, are inſerted into ſome one part, as divers of theſe which move the arm and the ſhoulder, which ariſing from many ſpondyls, are inſerted into the bone of the ſhoulder, and the ſhoulder-blade. Others ariſe from one part, and inſert themſelves into more, as thoſe which ariſe from the bottom of the ſhoulder-blades, are extended and inſerted into ſome eight or nine of the upper ribs, to help reſpiration; and the benders and extenders of the fingers and toes: Others ariſing from many bones, are inſerted into as many, as ſome of thoſe which ſerve for reſpiration, to wit thoſe which we call the hinder Saw-muſcles and the *Semiſpinatus*, which ſends a tendon into all the ribs. Others have their originall from many bones, and end in griſles of the ſeven ribs, as thoſe two which lye under the *Sternon*. Moreover alſo theſe differences of muſcles may be drawn from the originall and inſertion, that ſome proceed from bones, and are inſerted into the next bone, to help and ſtrengthen the motion thereof, as the three muſcles of the Hip: Others ariſe from an upper bone and are not inſerted into the next, but into ſome other, as the long muſcles. Some are named from the part they move, as the temporall muſcles, becauſe they move the temples; others from their office, as the grinding muſcles, becauſe they move the skin as a miill, to grinde aſunder the meal. From their form or figure, becauſe ſome are like Mice, other like Lizards which have their legs cut off, for that they imitate in their belly, body or tendon, the belly or tail of ſuch creatures, and from whence the names of *Muſculus* and *Lacertus* are derived. Such are thoſe which bend the wriſt, and which are faſtned to the bone of the Leg, and which extend the foot; others are triangular, as that which lifts up the arm, called *Epomis* or *Deltoides*, and that which draws the arm to the breſt, called the Pectorall muſcle. Others quadrangular, as the Rhomboides, or Lozenge-muſcle of the ſhoulder-blade, and the two hindeſom-muſcles ſerving for reſpiration, and two of the wriſts which turn down the hand; others conſiſt of more than four angles, as the oblique deſcending, and that muſcle which joins it ſelf to it from the ſhoulder-blade; others are round and broad, as the Midriff; others circular, as the Sphincter-muſcle of the fundament and bladder; others are of a pyramidicall figure, as the ſeventh muſcle of the ey, which compaſſes the optick nerve in beaſts but not in men. Others have a ſemicircular form, as that which ſhuts up the ey, ſeated at the leſſer corner thereof; others reſemble a Monks cowl, or hood, as the *Trapezius* of the ſhoulder-blade. Beſides others at their firſt originall are narrow, but broad at their inſertion, as the Saw-muſcle of the ſhoulder, and the tranſverſe of the *Epigaſtrium*; others are quite contrary, as the three muſcles of the Hip; others keep an equal breadth or bigneſs in all places, as the intercoſtall muſcles and theſe of the wriſt; others are long and ſlender, as the long muſcle of the thigh; others are long and broad, as the oblique deſcending muſcles of the *Epigaſtrium*; others are directly contrary, as the Intercoſtall, which are very narrow. From their perforations, for ſome are perforated, as the Midriff which hath three holes, as alſo the oblique and tranſverſe of the *Epigaſtrium*, that ſo they may give paſſage forth to the preparing ſpermatick veſſels, and to the ejaculatory veſſels, the Coat *Erythroides* aſſociating and ſtrengthening them; others are not perforated. From their magnitude, for ſome are moſt large, as the two muſcles of the Hip; others very ſmall, as the eight ſmall muſcles of the neck, and the proper muſcles of the Throtle, and the wormy muſcles. Others are of an indifferent magnitude. From their colour, for ſome are white and red, as the Temporall muſcles, which have tendons coming from the midſt of their belly; others are livid, as the three greater muſcles of the calf of the leg, which colour they have by the admixtion of the white, or tendinous nervie coat with the red fleſh, for this coat by its thickneſs darkning the colour of the fleſh, ſo that it cannot ſhew its redneſs and freſh colour, makes it ſeem of that livid colour. From their ſituation, for ſome are ſuperficiary, as thoſe which appear under the skin and fat; others deep in and hid, as the ſmooth and four twin muſcles; ſome are ſtretched

Where a Muſcle hath its originall.

Differences of muſcles from their inſertion.

Differences of Muſcles taken from their figure.

Differences from their perforations.

From their magnitude.

From their colour.

From their ſite.

ſtretched out, and (as it were) ſpred over in a ſtreight and plain paſſage, as the muſcles of the thigh which move the leg, except the Ham-muſcle; others oblique, as thoſe of the *Epigaſtrium*; otherſome tranſverſe, as the tranſverſe of the *Epigaſtrium*; where you muſt obſerve, that although all the fibers of the muſcles are direct, yet we call them oblique and tranſverſe, by comparing them to the right muſcles, as which by the concourſe of the fibers make a ſtreight or acute angle.

From their Fibers. From the ſorts of fibers; for ſome have one kinde of fiber; yet the greateſt part enjoy two ſorts running ſo up and down, that they either are croſſed like the letter X, as happens in the pectorall and grinding muſcles; or elſe do not concur, as in the Trapezii. Others have three ſorts of fibers, as the broad muſcle of the face.

From their connexion. From their coherence and connexion, or their texture of nervous fibers; for ſome have fibers ſomewhat more diſtant and remote immediately at their originall, than in other places, as you may ſee in the muſcles of the buttocks: Others in their midſt and belly, which by reaſon thereof in ſuch muſcles is more big or tumid, their head and tail being ſlender, as happens in moſt of the muſcles of the arm and leg, in which the denſe maſs of fleſh interwoven with fibers, disjoins the fibers in ſo great a diſtance; in otherſome the fibers are more diſtant in the tail, as in the greater Saw-muſcle ariſing from the bottom of the ſhoulder-blade; in others they are equally diſtant through the whole muſcle, as in the muſcles of the wriſt and between the ribs.

From their head. From their head; for in ſome it is fleſhy, interwoven with few fibers, as in the muſcles of the buttocks; in others it is wholly nervous, as in the moſt-broad-muſcle common to the arm and ſhoulder-blade, and in the three muſcles of the thigh proceeding from the tuberoſity of the hucle-bone; in ſome it is nervous and fleſhy, as in the internall and externall muſcle of the arm. Beſides, ſome have one head, others two, as the bender of the elbow, and the externall of the leg; others three, as the Threeheaded muſcle of the thigh. But we muſt note that the word Nerve or Sinew is here taken in a large ſignification, for a ligament, nerve and tendon, as *Galen* ſaith, (*Lib. de Oſsibus*) and moreover we muſt obſerve, that the head of a muſcle is one while above, another while below, otherwhiles in the midſt, as in the Midriff, as you may know by the inſertion of the Nerve, becauſe it enters the muſcle by its head.

From their belly. From their belly alſo, there be ſome differences of muſcles taken; for ſome have their belly immediately at their beginning, as the muſcles of the buttocks; others at their inſertion, as the Midriff; others juſt at their head, as thoſe which put forth the Calf of the leg; in others it is ſomewhat further off, as in thoſe which draw back the arm, and which bend the leg; in others, the belly extends even from the head to the tail, as in the intercoſtall muſcles, and theſe of the wriſt; in others it is produced even to their inſertion, as in thoſe of the palms of the hands and ſoles of the feet; ſome have a double belly diſtinguiſhed by a nervous ſubſtance; as thoſe which open the mouth, and thoſe which ariſe from the root of the lower proceſs of the ſhoulder-blade.

From their Tendons. Moreover the differences of muſcles are drawn alſo from the Tendons, for ſome have none, at leaſt which are manifeſt, as the muſcles of the lips and the ſphincter-muſcles, the intercoſtall and thoſe of the wriſt; others have them in part, and want them in part, as the Midriff; for the Midriff wants a Tendon at the ends of the ſhorter ribs, but hath two at the firſt *Vertebra* of the Loins in which it is terminated: Others have a Tendon indeed. But ſome of theſe move with the bone, ſome not, as the muſcles of the eys; and beſides, ſome of theſe have broad and membranous tendons, as the muſcles of the eys and *Epigaſtrium*, except the right muſcles: In others they are thick and round, as in the benders of the fingers; in others they are leſs round, but more broad than thick, ſuch is the Tendon ariſing from the twin muſcles and *Soleus* of the leg; others have ſhort Tendons, as the muſcles which turn down the hand; otherſome long, as thoſe of the palms of the hands, and ſoles of the feet; beſides others produce Tendons from the end of their belly, which Tendons are manifeſt; others from the midſt, as the Temporall muſcles.

Beſides alſo, others diffuſe many Tendons from their belly, as in the hands the benders of the fingers, and the extenders of the feet. Otherſome put forth but one, which ſometimes is divided into many, as thoſe which bend the third articulation of the foot; otherwhile many muſcles by their meeting together make one Tendon, as the three muſcles of the Calf of the leg, and thoſe which bend the cubit and leg. All Tendons have their originall, when the nerves and ligaments diſperſed through the fleſhy ſubſtance of a muſcle, are by little and little drawn and meet together, untill at laſt carried to the joint, they are there faſtned for the fit bending and extenſion thereof. From the contrariety of their Actions, for ſome parts have contrary muſcles, benders and extenders; other parts have none, for the Cods and fundament have only lifters up. From their function, for ſome are made for direct motions, as thoſe which extend the fingers and toes; others for oblique, as the Supinators of the hand, and the Pronators; others perform both, as the pectorall muſcle, which moves the Arm obliquely upward and downward, as the upper and lower fibers are contracted; and alſo outright, if all the fibers be contracted together, which alſo happens to the *Deltoides* and *Trapezius*. I have thought it good to handle particu-

From their action.

From their function.

larly

larly these differences of muscles, because that by understanding them the prognostick will be more certain; and also the application of remedies to each part; and if any occasion be either to make incision, or suture, we may be more certain whether the part affected be more or less nervous.

## CHAP. IX.

### *Of the parts of a Muscle.*

HAving declared the nature and differences of a Muscle, we must note that some of the parts thereof are compound or universall, others simple or particular. The compound are the head, belly, and tail. The simple are ligaments, a nerve, flesh, a vein, artery and coat. For the compound parts, by the head, we understand the beginning and originall of a muscle, which is one while ligamentous and nervous, otherwhiles also fleshy. By the belly, that portion which is absolutely fleshy; But by the tail we understand a Tendon consisting partly of a nerve, partly of a ligament promiscuously comming forth from the belly of the muscle. For as much as belongs to the simple, which are six in number, three are called proper, and three common. The proper are a Ligament from a bone, a nerve proceeding from the Brain or spinall marrow, and flesh compact by the concretion of blood. The common are, a vein from the Liver or trunk arising from thence; an artery proceeding from the Heart, a Coat produced by the nervous and ligamentous fibers spreading over the superficies of the muscle. But for the simple use of all such parts, the nerve is (as it were) the principall part of a Muscle, which gives it sense and motion, the ligament gives strength, the flesh contains the nervous and ligamentous fibers of the Muscle, and strengthens it, filling up all the void spaces, and also it preserves the native humidity of these parts, and cherisheth the heat implanted in them; and to conclude, defends it from all externall injuries; for like a fan it opposeth it self against the heat of the Sun; and is as a garment against the cold; and is as a cushion in all fals and bruises; and as a buckler or defence against wounding weapons. The vein nourishes the muscle, the artery gives it life, the coat preserves the harmony of all the parts thereof, lest they should be any ways disjoined or corrupted by purulent abscesses breaking into the empty or void spaces of the Muscles, as we see it hapneth in a Gangrene, where the corruption hath invaded this membrane, by the breathing out of the more acrid matter or filth.

The compound and simple parts of a muscle.

What use each simple particle hath in a muscle.

## CHAP. X.

### *A more particular inquisition into each part of a muscle.*

HAving gone thus far, it remains, that we more particularly inquire into each part of a muscle, that (if it be possible) nothing may be wanting to this discourse. Wherefore a Ligament properly so called, is a simple part of mans body, next of a bone and grisle, the most terrestriall, dry, hard, cold, white, taking its originall immediatly, or by the interposition of some Medium from the Bones or Grisles (from whence also the Muscles have their beginning) whereby it comes to pass, that a ligament is void of sense, unless it receive a nerve from some other place; (for so the ligaments which compose and strengthen the tongue and yard, are partakers of sense, and it inserts it self into the bone and grisle, that so it may bind them together, and strengthen and beautifie the whole joint or connexion; (for these three be the principall uses of a ligament) then diffusing it self into the membranes and muscles to strengthen those parts. A Nerve, to speak properly, is also a simple part of our body, bred and nourished by a gross and phlegmatick humor, such as the brain, the originall of all the nerves, and also the Spinall marrow endued with the faculty of feeling, and oftentimes also of moving. For there be divers parts of the body which have nerves, yet are destitute of all voluntary motion, having the sense only of feeling, as the membranes, veins, arteries, guts, and all the entrails. A nerve is covered with a double cover from the two membranes of the brain, and besides also with a third proceeding from the ligaments which fasten the hinder part of the head to the *Vertebra's*, or else from the *Pericranium*. We understand no other things by the fibers of a Nerve, or of a Ligament, than long and slender threds, white, solid, cold, strong, more or less, according to the quantity of the substance, which is partly nervous and sensible, partly ligamentous and insensible. You must imagine the same of the fleshy fibers in their kinde; but of these threds some are streight for attraction; others oblique, for retention of that which is convenient for the creature; and lastly, some transverse, for expulsion of that which is unprofitable. But when these transverse threds are extended in length, they are lessned in bredth; but when they are directly contracted, they are shortned in length. But when they are extended all together as it were with an unanimous consent, the whole member

The nature of a Ligament.

The threefold use of a Ligament.

What a nerve is.

What we mean by the nervous and ligamentous fibers.

is wrinkled as contracted into it self, as on the contrary it is extended when they are relaxed. Some of these are bestowed upon the animall parts, to perform voluntary motions; others upon the vitall to perform the agitation of the heart and arteries; others upon the naturall for attraction, retention, and expulsion. Yet we must observe, that the attraction of no similar part is performed by the help of the foresaid fibers or threds, but rather by the heat implanted in them, or by the shunning of emptiness, or the familiarity of the substance. The flesh also is a simple and soft part, composed of the purer portion of the blood insinuating it self into the spaces between the fibers, so to invest them for the uses formerly mentioned. This is (as it were) a certain wall and bulwark against the injuries of heat and cold, against all falls and bruises, as it were a certain soft pillow or cushion yeelding to any violent impression. There be three sorts of flesh; one more ruddy, as the musculous flesh of perfect creatures, and such as have blood; for the flesh of all tender and young things having blood, as Calves, and also of all sorts of fish, is whitish, by reason of the too much humidity of the blood. The second kinde is more pallid, even in perfect creatures having blood, such is the flesh of the heart, stomach, weasond, guts, bladder, womb. The third is belonging to the entrails, or the proper substance of each entrail, as that which remains of the Liver (the veins, arteries and coat being taken away) of the bladder of the gall, brain, kidneys, milt: Some add a fourth sort of flesh which is spongy, and that they say is proper to the tongue alone.

By what power the similar parts, principally draw or attract.

What and of how many sorts the flesh is.

What a vein is.

A Vein is the vessel, pipe, or channel of the blood, or bloody matter; it hath a spermatick substance, consists of one coat composed of 3 sorts of fibers.

What an artery is.

An Artery is also the receptacle of blood, but that spirituous and yellowish, consisting in like manner of a spermatick substance; But it hath two coats with three sorts of fibers, the utmost whereof is most thin, consisting of right fibers, and some oblique: But the inner is five times more thick and dense than the utmost, interwoven with transverse fibers; and it doth not only contain blood and spirit, but also a serous humor, which we may beleeve because there be two emulgent Arteries as well as veins.

Why an artery is more thick and dense than a vein.

But the inner coat of an Artery is therefore more thick, because it may contain blood which is more hot, subtil, and spirituous; for the spirit, seeing it is naturally more thin and light, and in perpetuall motion, would quickly fly away, unless it were held in a stronger hold. There is other reason for a Vein, as that which contains blood gross, ponderous, and slow of motion. Wherefore if it had acquired a dense and gross coat, it could scarce be distributed to the neighbouring parts: God the maker of the Universe, foreseeing this, made the coats of the vessels contrary to the consistence of the bodies contained in them. The *Anastomasis* of the Veins and Arteries, that is to say, the application of the mouths of the one to the other, is very remarkable, by benefit of which they mutually communicate and draw the matters contained in them, and so also transfuse them by insensible passages, although that *anastomosis* is apparent in the Vein and Artery that meet together at the joint and bending of the arm, which I have sometimes shewed in the Physick schools, at such time as I there dissected Anatomies.

The mutuall Anastomosis of the veins and arteries. Where it is manifest.

From whence a muscle hath its beginning or head.

But the action or function of a Muscle is either to move or confirm the part according to our will, into which it is implanted; which it doth when it draws it self towards its originall, that is to say, its head. But we define the head by the insertion of the nerve, which we understand by the manner of the working of the Muscle.

## CHAP. XI.

### *Of the muscles of the Epigastrium, or lower Belly.*

NOw seeing that we have taught what a Muscle is, and what the differences thereof are, and what simple and compound parts it hath, and what the use, action, and manner of action in each part is; it remains that we come to the particular explication of each Muscle, beginning with those of the lower belly, as those which we first meet withall in dissection.

Eight muscles of the Epigastrium.

These are 8 in number, four oblique, two on each side, two right or direct, one on the right, another on the left side; and in like manner two transverse. All these are alike in force, magnitude and action, so mutually composed, that the oblique descendant of one side, is conjoined with the other oblique descendant on the other side, and so of the rest.

We may add to this number the two little Supplying or Assisting muscles, which are of a *Pyramidall* form, and arise from the Share-bone, above the insertion of the right muscles; Of the oblique Muscles of each side the one ascends, the other descends, whereupon it comes to pass, that they are called the Oblique descendant and ascendant Muscles. Those oblique which we first meet with, are the descendant, whose substance is partly sanguine, partly spermatick; for they are fleshy, nervous, ligamentous, veinous, arterious, and membranous. Yet the fleshy portion is predominant in them, out of which respect *Hippocrates* is wont to express the muscles by the name of fleshes; their greatness is indifferent be-

The oblique descendant. Their substance. Their greatnes and figure.

between the large and the ſmall muſcles; their figure is three ſquare. They are compoſed of the forementioned parts, they are two in number; their ſite is oblique, taking their beginning from the touching of the great ſaw-muſcle, and from the ſixt and ſeventh true ribs, or rather from the ſpaces between the ſix lower ribs, and rather on the forepart of the muſcles, than of the ribs themſelves, from whence ſhunning the *Vertebra's* of the Loins, the fleſhy parts of them are terminated in the externall and upper eminency of the Haunch-bone, and the membranous end in the lower eminency of the Share-bone and the White-line. Yet *Columbus* diſſenting from this common deſcription of the oblique Muſcles, thinks that they are only terminated in the White-line, and not in the Share-bone. For (ſaith he) wherefore ſhould they be inſerted into the Share-bone which is not moved? But becauſe it would be an infinit labor and trouble to ſet down at large the ſeverall opinions of all Authors of Anatomy; I have thought it ſufficient for me to touch them lightly by the way. Their connexion is with the oblique aſcendant lying under them, and with the direct or right. Their temperament is twofold, the one hot and moiſt, by reaſon of the belly and the fleſhy portion of them; the other cold and dry, in reſpect of their ligamentous and tendinous portion. Their action is to draw the parts into which they are inſerted towards their originall, or elſe to unite them firmly. Yet each of theſe privately and properly draws the hip in an oblique manner towards the *Cartilago Scutiformis* or breſt-blade. Then follow the oblique aſcendant, who have the ſame ſubſtance, quantity, figure, compoſure, number and temper the deſcendant have. They are ſituate between the deſcendant and tranſverſe with whom they have connexion, eſpecially by the veſſels which are brought from the parts beneath. All the fleſhy parts ariſe from the rackbones of the Haunch to the ends of the baſtard ribs, which they ſeem to admit above and below, being fleſhy even to the fourth, and then becoming membranous, they take their way to the White-line, with a double *aponeuroſis*, which paſſes through the right Muſcles above and below, as we may plainly ſee from the navell downwards. In their fleſhy part they draw their original from the ſpine of the Haunch-bones a little lower than the deſcendent end in their fleſhy part. But for their membranous parts, they ariſe before from the ſharebone, but behinde from the ſpondyls of the Holy-bone, and *Vertebra's* of the Loins obliquely aſcending upwards to the White-line, into which they are terminated by an *aponeuroſis* or membranous tendon (which ſeems to penetrate the right Muſcle upwards and downwards, eſpecially under the navell) but by their fleſhy part at the ends of all the baſtard ribs, which they ſeem to receive above and below. And becauſe theſe muſcles are terminated in the White-line, they have alſo another uſe, yet ſuch as is common to all the muſcles of the *Epigaſtrium*, that is, to preſs down the Guts. Their action is (if they perform it together) to draw down the cheſt, and dilate the breſt; but if their actions be ſeparate, they draw the cheſt to the hip with an oblique motion. After theſe follow the right muſcles, ſo called becauſe they deſcend according to the length of the body, and becauſe they have right or ſtreight fibers.

Their compoſure and ſite.

Their connexion. Their temperament. Their action.

The oblique aſcendant. Their ſite and connexion.

Their action.

The right muſcles of the *Epigaſtrium*.

We will ſay nothing (to ſhun prolixity, which in all other places we will avoid) of their ſubſtance and other conditions, which they have common with the fore-mentioned Muſcles. They are ſituate in the eminenteſt or extuberating region of the belly, bounding the *Epigaſtrium* taken in generall, (or the ſuperficiary belly) they are divided by the manifeſt intercourſe of the White-line, even to the Navell, in which place they ſeem to be united even to the place of their inſertion. They draw their originall not from the Share-bone, as ſome would have it, but according to the inſertion of their nerves from the ſides of the *Cartilago ſcutiformis*, and the ends of the ſixth, ſeventh and eighth ribs; but they end in the Share-bone, where they make a common Tendon ſufficiently ſtrong and ſhort. *Sylvius*, *Veſalius*, and *Columbus* think they ariſe from the Share-bone, becauſe they cannot be inſerted into that bone, becauſe it is unmovable. You may perceive in theſe Muſcles certain nervous and tranſverſe interſections, oftentimes three in number for the ſtrength of theſe Muſcles, (of which *Galen* makes no mention, although they may be ſeen in Apes.) And alſo in the inner ſide of theſe muſcles you may ſee four veins, and as many arteries, of which ſome creep upwards, others run downwards. The upper, called the Mamillary, deſcend from the Axillary by the ſide and lower parts of the *Sternon*, the ſlenderer portions thereof being diſtributed by the way to the *Mediaſtinum*, and about the fourth and fift rib to the Dugs, from whence they take their name.

Their ſite.

Originall.

That which remains breaking out by the ſides of the Breſt-blade, inſerts it ſelf into thoſe muſcles, creeping along, even almoſt to the navell; in which place they are manifeſtly united (that is, the veins with the veins, and arteries with the arteries) with the Epigaſtrick, which aſcend from the upper part of the Iliacks on each ſide under the ſaid muſcles, untill they meet with theſe four mamillary veſſels. That you may finde this concourſe of the veins and arteries about the navell, you muſt follow both the upper and the lower ſomewhat deep into the fleſh, preſſing the blood on both ſides from above downwards, and from below upward, untill you ſhall finde the exoſculation of theſe veſſels, which will appear by this, That the blood will flow from this into that, and from that into this; otherwiſe you can ſcarce perceive it, by reaſon of the ſmalneſs of ſuch veſſels which want blood.

The meeting together of the Epigaſtrick and mamillary veins and arteries.

But that by the benefit of ſuch concourſe of the veſſels, the matters may be communicated and tranſported both from the womb to the dugs, and again from the dugs to the womb, appears in Nurſes who want their courſes, when the milk comes into their dugs; and on the contrary loſe their milk when their courſes flow plentifully. Otherwiſe to what purpoſe ſhould there be ſuch concourſe between the veſſels of the paps and womb? for there are veins and arteries diffuſed to the ſides of the womb from the root of the Epigaſtricks; for indeed the Epigaſtricks which in their aſcent meet with the mamillary, go not to the womb, though they be next to them, and ariſe from the ſame trunk with the Hypogaſtrick vein of the womb. The action of theſe Muſcles is, to move or draw near together the parts of the Hypogaſtrium to the *præcordia* or Hypochondries. Their uſe, in *Columbus* opinion, is, to draw the breſt downwards ſo to dilate it. At the ends of theſe, nature hath produced two other ſmall Muſcles from the upper part of the Share-bone, of a triangular figure, for the ſafety of the thick and common tendon of the right Muſcles; whereupon they are called *Succenturiati*, or aſſiſters.

Their action.

Their uſe.

*The firſt figure of the Lower belly.*

FIG. I

FIG. II.

*AABCD.* The upper, lower and laterall parts of the *Peritonæum.*

EE. The white Line from the griſle of the Breaſt-bone, called the Breaſt-blade, to the commiſſure or meeting of the Sharebones.

F. The Griſle of the *Breaſt-bone, Cartilago enſi-formis*, or the Breaſt-blade.

G. The Navell, which all the Muſcles being taken away, muſt be kept for the demonſtration of the Umbilicall Veſſels.

H H. The productions of the *Peritonæum*, which contain the ſeminary Veſſels on either ſide.

** The hole which giveth way to the ſeminary Veſſels of men.

II. A vein and an artery from the *Epigaſtrick*, which being carried upward under the right Muſcles, do here hang down, and are diſtributed into the lower part of the *Abdomen.*

K K. A Vein and an artery, from the internall Mammary proceeding from under the Bone of the Breaſt, are carried downward through the right muſcles, & are diſſeminated into the upper part of the *Abdomen.*

1, 2. the place wherin the right muſcles ariſe, which being here cut off, do hang down, that their Veſſels may the better be ſeen. 3, 4. The *Anaſtomaſis* or inoculation of the foreſaid Veſſels, making the conſent of the *Abdomen* and the Noſe, and of the Womb with the Breſts, as ſome think. LL. Branches of Veins running into the ſides of the *Peritonæum.* N. The place of the Haunch-bone bared, to which the Oblique and the Tranſverſe muſcles do grow.

The Pyramidal or aſſiſting Muſcles.

Some (moved with I know not what reaſon) would have theſe two ſmall Muſcles to help the erection of the yard. *Columbus* thinks they ſhould not be ſeparated from the right, and that they only are the fleſhy beginnings of the right. But on the contrary, *Fallopius* manifeſtly proves them different and ſeparate from the right, and ſhews their uſe.

The tranſverſe muſcles of the *Epigaſtrium.* Their figure and ſite.

The Tranſverſe remain to be ſpoken of, ſo called by reaſon of their fibers, which make right angles with the fibers of the right Muſcles. They have a quadrangular figure ſituate upon the greateſt part of the *Peritonæum*, to which they ſtick ſo cloſe that they ſcarce can be ſeparated. They take their originall from the production of the loins, the eminency of the Haunch-bone, the tranſverſe productions of the *vertebra's* of the loins, and the ends of the baſtard-ribs; contrary to the opinion of many, whom the inſertion of the nerve convinces, but they end in the White-line, as all the reſt do.

Their action. The common uſe and action of the eight muſcles of the *Epigaſtrium.*

Their action is to preſs the guts, eſpecially for the expulſion of excrements.

But all the eight recited Muſcles, beſides their proper uſe, have another common, that is, they ſtand for a defence or bulwark for all the parts lying under them, and ſerve for the expulſion both of the excrements, infant, and vapors, and alſo for the ſtrengthening

of

of the voice, as experience ſhews in thoſe who ſound Trumpets and Cornets.

Therefore theſe muſcles do equally on every ſide preſs the Belly; but the Midriff, the intercoſtall muſcles aſſiſting it, doth drive from above downwards, from which conſpiring contention follows the excretion of the excrements by the fundament; but unleſs the Midriff ſhould aſſiſt, theſe muſcles would preſs the excrements no more downwards, than upward to the mouth.

Why when the mouth is open the excrements go more ſlowly forth.

Although to this excretion of the excrements, it is not ſufficient that the Epigaſtrick, Midriff, and intercoſtall muſcles preſs the belly, but the muſcles of the throtle muſt be alſo ſhut. For the mouth being open, the excrements never go well forth; becauſe the vapors that paſs out of the mouth, which being reſtrained and driven to the Midriff, by ſtretching it powerfully thruſts down the excrement. Wherefore Apothecaries when they give glyſters, bid the Patient to open his mouth, that the glyſter may eaſilyer go up, which otherwiſe would ſcarcely go up, the mouth being ſhut, becauſe ſo we ſhould have no place empty in us, into which the glyſter might be admitted.

*Of the White-line, and Peritonæum or Rim of the belly.*

What the White-line is.

THe White-line is nothing elſe, than the bound and extremities of the muſcles of the *Epigaſtrium*, diſtinguiſhing the belly in the midſt into two parts, the right and left. It is called white, both of its own colour, and alſo for that no fleſhy part lyes under it, or is placed above it. It is broader above the navell, but narrower below, becauſe the right muſcles do there grow into one.

What the Peritonæum is.

Now we muſt treat of the Coat or membrane, *Peritonæum* or Rim of the belly; it is ſo called, becauſe it is ſtretched over all the lower belly, and particularly over all the parts contained in the ventricle, to which alſo it freely lends a common coat.

The ſubſtance, and quantity.

It hath a ſpermatick ſubſtance, as all other membranes have; the quantity of it in thickneſs is very ſmall, (for it is almoſt as thin as a Spiders web) yet differing in divers places in men and women; for men have it more thick and ſtrong above the navell, that ſo it may contain the extenſion of the ſtomack, often ſtretched beyond meaſure with meat and drink. On the contrary women have it ſo thick and ſtrong below their navell, that it ſeems double, that ſo they may more eaſily endure the diſtention of their womb, cauſed by the childe contained in it. But above the navell, men and women have the *Peritonæum* of an equal ſtrength, for the ſelf-ſame reaſon. The longitude and latitude of it is known by the circumſcription of the belly.

The figure.

The figure is round and ſomewhat long; it puts forth ſome productions, like finger-ſtalls, both for the leading and ſtrengthening the ſpermatick veſſels, and the Cremaſter muſcles of the Teſticles, and beſides it the ejaculatory veſſels, as alſo to impart a coat to the Teſticles and all the naturall parts.

The compoſition.

It is compoſed of ſlender, membranous and nervous fibers, certain ſmall branches of veins and arteries concurring with them, which it receives for life and nouriſhment from the adherent parts.

The number. Lib. de ſem.

This membrane is one in number, and beſides every where one and equal, although *Galen* would have it perforated in that place where the ſpermatick veſſels deſcend to the Teſticles; But in truth we muſt not think that a hole, but rather a production, as we ſaid before.

The later Anatomiſts have obſerved, the Coat *Peritonæum* is doubled below the Navel, and that by the ſpaces of theſe reduplications the umbilicall arteries aſcend to the Navell.

The ſite and connexion.

It is ſituate near the naturall parts, and compaſſes them about, and joined by the coat, which it gives them, as alſo on the ſides, it is joined to the *vertebra's* of the loins, from whoſe ligaments (or rather Perioſteum) it takes the originall: On the lower part, it cleaves to the ſhare-bone, and on the upper to the Midriff, whoſe lower part it wholly inveſts; on the fore or outer part it ſticks ſo cloſe to the tranſverſe muſcles, that it cannot be pluckt from them but by force, by reaſon of the complication and adhæſion of the fibers thereof with the fibers of the proper membrane of theſe muſcles, which membrane in *Galens* opinion proceeds from this *Peritonæum*, that ſo it is no marvail that we may more eaſily break than ſeparate theſe two coats. It is of temperature cold and dry, as all other membranes are. Lib. 6. Meth.

Uſe.

It hath many uſes, the firſt whereof is, to inveſt and cover all the parts of the lower belly, ſpecially the Kall, leſt it ſhould be ſqueezed by great compreſſures and violent attempts into the empty ſpaces of the muſcles, as it ſometimes happens in the wounds of the *Epigaſtrium*, unleſs the lips of the ulcer be very well united; for then appears a tumor about the wound by the Guts and Kall thruſting without the *Peritonæum* into thoſe ſpaces of the muſcles; from whence proceeds cruel pain.

Another uſe is to further the caſting forth of the excrements by preſſing the ventricle and guts on the foreſide, as the Midriff doth above, as one ſhould do it by both their hands joined together.

The third uſe is, it prohibits the repletion of the parts with flatulency after the expulſion of the excrements, by ſtraitning and preſſing them down.

The fourth and laſt is, that it contains all the parts in their ſeat, and binds them to the back-bone, principally that they ſhould not fly out of their places by violent motions, as leaping and falling from on high.

Lastly, we must know, that the Rim is of that nature, that it will easily dilate it self, as we see in Dropsies, in women with childe, and in tumors against nature.

## CHAP. VIII.

### *Of the Epiploon, Omentum, or Zirbus, that is, the Kall.*

The substance, magnitude, figure.

AFter the containing parts, follow the contained, the first of which is the *Epiploon*, (or Kall) so called, because it (as it were) swims upon all the guts. The substance of it is fatty and spermatick, the quantity of it for thickness is diverse, in divers men according to their temperament. The latitude of it is described by the quantity of the guts. It is in figure like a purse, because it is double. It is composed of veins, arteries, fat and a membrane, which sliding down from the gibbous part of the ventricle, and the flat part of the gut *Duodenum* and spleen over the Guts, is turned back from the lower belly to the top of the Colon. It is one as we said covering the Guts. It hath its chief connexion with the first *Vertebra's* of the Loins, from which place in beasts it seems to take a coat, as in men from the hollow part of the Spleen, and gibbous of the ventricle, and depressed part of the *Duodenum*, from whence doubled it is terminated in the fore and higher part of the Colick-gut. Which moved *Galen* to write, that the upper part of the membrane of the Kall was annexed to the ventricle; but the lower, to the laxer part of the Colick-gut. From the vessels of which parts it borrows his, as also the nerves, if it have any. The temper of it in lean bodies is cold and dry, because their Kall is without fat; but in fat bodies it is cold and moist by reason of the fat. The use of it is twofold: The first is to heat and moisten the Guts, and help their concoction, although it do it by accident, as that which through the density of the fat hinders the cold air from piercing in, and also forbids the dissipation of the internall heat. Another use is, that in want of nourishment in times of great famin, for sometimes it cherishes, and (as it were) by its dew preserves the innate heat, both of the ventricle and neighbouring parts, as it is written by *Galen*. Moreover we must observe, that in a rupture or relaxation of the *Peritonæum*, the Kall fals down into the *scrotum*, from whence comes that rupture we call *Epiplocele*. But in women that are somewhat more fat, it thrusts it self between the bladder and the neck of the womb, and by its compression hinders, that the seed comes not with full force into the womb, and so frustrates the conception. Besides, when by a wound or some other chance, any part of it be defective, then that part of the belly which answers to it, will afterwards remain cold and raw, by reason of the forementioned causes.

The composure.

The connexion.

*Lib. Anatom. administ.*

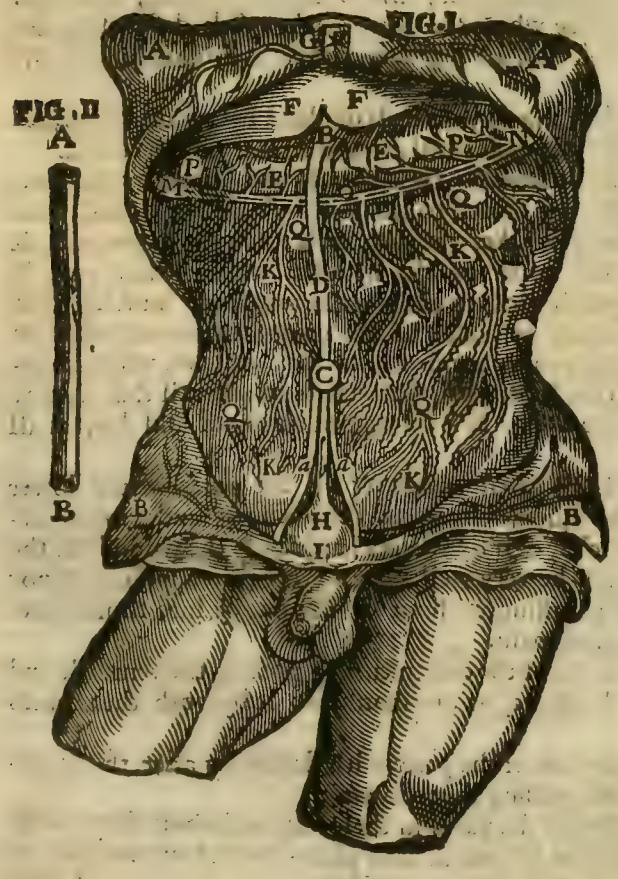
The temper.

The use twofold.

*Lib. 4. de usu partium.*

A cause of frustrating conception.

*The second figure of the lower belly.*




*A A, B B.* The inner part of the *Peritonæum* cut into four parts, and so turned backward.

*B.* The upper *B* sheweth the implantation of the Umbilicall vein into the Liver.

*C.* The Navel separated from the *Peritonæum*. From *D* to the upper *B* the Umbilicall veins.

*E, E.* The forepart of the stomach blown up, neither covered by the Liver nor Kall.

*F, F.* A part of the *Gibbous* side of the Liver.

*G.* Vessels disseminated through the *Peritonæum*. * The Brest blade.

*H.* The bottom of the Bladder of urine.

*I.* The connexion of the *Peritonæum* to the bottom of the Bladder.

*K, K, K, K.* The Kall covering the Guts.

*M, N.* Vessels and sinews embracing the bottom of the stomach.

*O* The meeting of the Vessels of both sides; so that *M, N,* and *O,* shew the seam which *Aristotle* mentions, 3 *Hist.* & 4 *de part. Anim.* where he saith, That the Kall arises and proceeds from the midst of the belly.

*P, P.* Branches of Vessels running alongst the bottom of the stomach.

*Q Q Q Q.* Certain branches of the Vessels distributed to the upper membrane of the *Omentum*, and compassed with fat.

*a, a.* The two Umbilicall arteries going down by the sides of the bladder to a branch of the great artery.

*b* The Ligament of the Bladder which is shewed for the *Urachus*.

CHAP.

## CHAP. XIIII.

### *Of the Ventricle or Stomach.*

NOw we muſt ſpeak of the Stomach, the receptacle of the food neceſſary for the whole body, the ſeat of appetite, by reaſon of the Nerves diſperſed into its upper orifice, and ſo into its whole ſubſtance. The ſubſtance thereof is rather ſpermatick than ſanguine, becauſe that for one fleſhy membrane, it hath two nervous; The quantity or magnitude of the ventricle is divers, according to the various magnitude of bodies, and gluttony of men. The figure of it is round and ſomewhat long, like a Bagpipe. The ſtomach is compoſed of two proper coats, and one common from the *Peritonæum*, together with veins, ſinews, and arteries; the innermoſt of its proper coats is membranous woven with right fibers, for the attraction of meats, it is extended and propagated even to the mouth thereof, whereby it comes to paſs that the affections of one part may eaſily be communicated to the other by ſympathy, or conſent. This coat hath its originall from the membranes of the brain which accompany the nerves deſcending from the third and fourth conjugation to the mouth thereof. And in like ſort from other productions deſcending by the paſſages of the head, from whence alſo another reaſon may be drawn from that, which they commonly bring from the nerves of the ſixt conjugation; why in wounds of the head, the ſtomach doth ſo ſoon ſuffer by conſent with the brain. The exterior or outer is more fleſhy and thick, woven with oblique fibers, to retain and expell. It draws it originall from the *Pericranium*, which as ſoon as it comes to the gullet, takes unto it certain fleſhy fibers. There be nerves ſent into the ſtomach from the ſixt conjugation of the brain, as it ſhall be ſhewed in its proper place. Veins and arteries are ſpread into it from the *Gaſtrica*, the *Gaſtrepiploides*, the *Coronaria* and ſplenick, from the ſecond, third, and fourth diſtribution of the *Vena porta*, or gate-vein; and the third of the deſcendent artery to the naturall parts, as ſoon as it paſſes forth of the midriffe.

What the ventricle is
The ſubſtance.
The magnitude.
The figure.
The compoſure.
The cauſe of the conſent of the mouth and ſtomach.

It is one in number. The greater part of it is ſituated on the left ſide between the ſpleen, the hollowneſs of the liver, and the guts, that aſſiſted by the heat of ſuch neighbouring parts, it may more cheerfully perform the concoction of the meat. Neither am I ignorant that *Galen* hath written, that a great part of the ſtomach lies on the left ſide. But inſpection it ſelf, and reaſon makes me derogate from *Galens* authority, for becauſe there is more empty ſpace on the left ſide, by reaſon the ſpleen is leſs than the liver, it was fit it ſhould lie more on the left ſide. The more proper connexion of it is with the gullet and guts, by its two orifices; with the brain by its nerves; with the liver and ſpleen by its veins; with the heart by its arteries; and with all the naturall parts by its common membrane.

The number.
*Lib. 4. de uſu partium.*
The connexion.

The temper of the ventricle in men of good habit, is temperate, becauſe it is almoſt compoſed of the equall commixture of ſanguine and ſpermatick parts; or according to *Galens* opinion, it is cold of its ſelf, and by the parts compoſing it; and hot by the vicinity of the bowels. But in ſome it is hotter, in others colder, according to the divers temper and complexion of divers bodies. That ſtomach is to be thought well tempered, that powerfully draws down the meat and drink, and embraces and retains them ſo drawn, untill by concoction and elixation, they ſhall be turned into a juice like cream (which the Greeks call *Chylos*;) and laſtly, which doth ſtrongly ſend from it, and repell the excrements of this firſt concoction.

The temper.
*Lib. 9. Meth.*

The ſtomach is known to be hotter by this, that it better concocts and digeſts courſe and hard meats, as beef, hard egs, and the like, than ſoft meats eaſie of digeſtion, which it corrupts and turns into belchings. For ſo a young chickin, is ſooner burnt than well roſted at a great fire. The ſtomach which is colder, deſires much meat, but is ſlow in concocting them, eſpecially if they be cold and hard of digeſtion, which for that cauſe quickly turn ſowre. The action of a well conditioned ſtomach is twofold, one common, another proper. The common is to attenuate, mixe and digeſt the meats taken in at the mouth, for the nutrition of it ſelf and the whole body, after the liver hath performed its duty, which before it be done, the ventricle only enjoyes the ſweet pleaſure of the *Chylus*, and comforts its ſelf againſt the impurity of the adjacent parts, whereof it is called the work-houſe of concoction. Its firſt action is to attract, retain, and aſſimilate to it ſelf that which is convenient; but to expell whatſoever ſhall be contrary, either in quantity, or quality, or in the whole ſubſtance.

Notes of a hot ſtomach.
The action twofold.

It hath two orifices, one above, which they commonly call the ſtomach and heart, the other lower, which is called the *Pylorus*, or lower mouth of the ſtomach. The upper bends to the left ſide neer the back bone; it is far more large and capacious than the lower, that ſo it may more commodiouſly receive meats half chewed, hard and groſs, which Gluttons caſt down with great greedineſs; it hath an exquiſite ſenſe of feeling, becauſe it is the ſeat of the appetite, by reaſon of the nerves incompaſſing this orifice, with their mutuall imbracings; whereby it happens that the ventricle in that part is endued with a quick ſenſe, that perceiving the want and emptineſs of meat, it may ſtir up the creature to ſeek food. For albeit

The two orifices of the ſtomach.

nature

nature hath beſtowed four faculties on other parts, yet they are not ſenſible of their wants, but are only nouriſhed by the continuall ſucking of the veins, as plants by juice drawn from the earth.

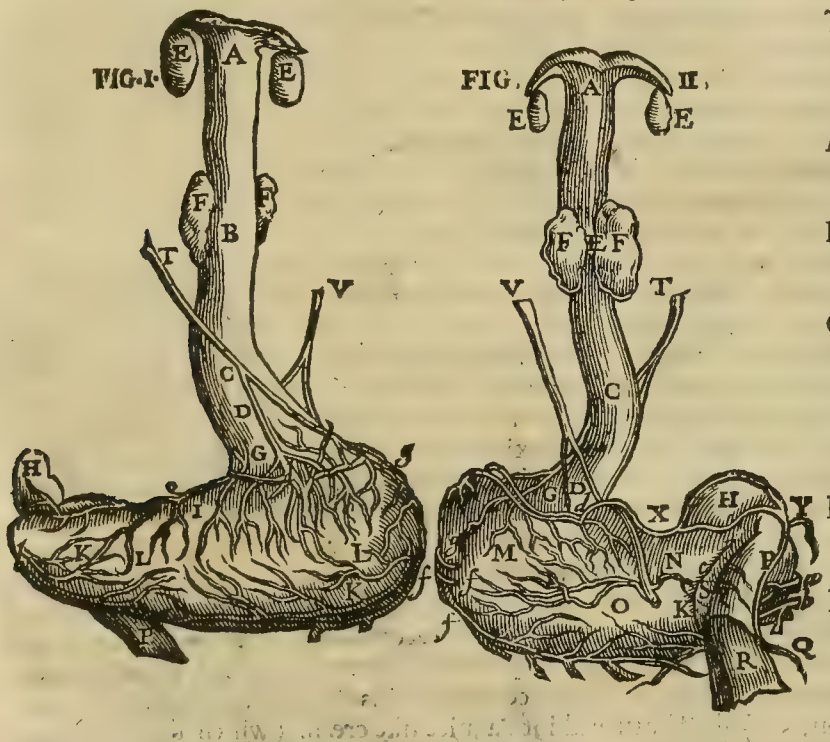
The ſite.

This orifice is ſeated at the fifth *Vertebra* of the cheſt, upon which they ſay it almoſt reſts. Yet I had rather ſay that it lies upon the twelfth *Vertebra* of the cheſt, and the firſt of the loins; for in this place the gullet perforates the midriffe, and makes this upper orifice: The lower orifice bends rather to the right ſide of the body, under the cavity of the liver. It is far ſtraiter than the upper, leſt any thing ſhould paſs away before it be well attenuated and concocted; and it doth that by the help or aſſiſtance of, as it were, a certain ring, like to the ſphincter muſcle of the fundament, which ſome have thought a glandule made by the tranſpoſition of the inner and fleſhy membrane of the ventricle into that which is the outer of the guts. I know *Columbus* laughs at this glandulous ring, but any one that looks more attentively ſhall perceive that the *Pylorus* is glandulous. The ſtomach in its lower and inner ſide, hath many folds and wrincles, which ſerve to hold and contain the meats, untill they be perfectly concocted. In the ventricle we obſerve parts gibbous and hollow; the hollow is next to the liver and midriffe; the gibbous is towards the guts. Now we muſt note, that the ventricle when it is much reſolved or looſed, may ſlide down even to the navill near the bladder, the which we have obſerved in ſome bodies diſſected after their death.

The glandulous ring of the *Pylorus*.

The falling down of the ſtomach.

*The third and fourth figure.*




The firſt figure ſhews the fore-ſide of the ſtomach and gullet.

A. ſheweth the orifice of the gullet cut from the throat.

B. the ſtraight and direct courſe of the gullet from A. to B.

C. how the gullet above the firſt rack bone of the cheſt, from B. to C. inclineth to the right hand.

D. his inclination to the left hand, from C. to D.

EE. the two glandules called the Almonds, ſet cloſe to the gullet in the end of the throat, called alſo *Pariſtmia*, *Antiades*, *Tonſillæ* and *Salviares glandulæ*. FF. Another glandulous body in the midſt of the gullet, about the fifth rack bone, from which place the gullet gives place to the great arterie, ſomewhat declining to the right ſide: *Væſalius*, *Lib.* 5. *Cap.* 3. and *Columbus Cap. ult. lib.* 9. write, that thoſe Glandules are filled with a certain moiſture, with which the gullet is moiſtened, that the meats may ſlide down more eaſily into the ſtomach, as through a ſlippery paſſage. No otherwiſe than the *Glandulæ proſtatæ*, filled with a kind of groſs and oily moiſture, ſmooth the paſſage of the urine, that ſo it may flow through it, with a more free and leſs troubled courſe. G. the connexion of the gullet with the ſtomach, where the upper orifice of the ſtomach is faſhioned. H. the lower orifice of the ſtomach called *Pylorus*. I. K. the upper part of the ſtomach at I. the lower at K. LL. the fore-ſide of the ſtomach. P. the gut called *Duodenum*. T. V. the right and left nerves of the ſixth pair encompaſſing about the gullet and the uppermoſt left orifice of the ſtomach.

*The ſecond Figure ſheweth the back parts of the Ventricle and Gullet.*

A. EE. FF. G. H. P. TV. ſhew the like parts as in the former. From C. to D. the inclination of the ſtomach to the left hand. M. N. O. the backſide of the ſtomach. M. ſheweth the prominence of the left ſide. N. of the right. O. ſheweth the dock or impreſſion, where it reſteth upon the rack bones. Q. R. the paſſage of the bladder of the gall into the *Duodenum* at R. S, a glandulous body growing under the *Duodenum*, bearing up the veſſels X. Y. a nerve on the left ſide creeping up to the top of the ſtomach, and ſo running out to the liver.

CHAP.

## CHAP. XV.
### *of the Guts.*

THe Guts the inſtruments of diſtribution and expulſion, are of the ſame ſubſtance and compoſure with the ſtomach, but that the ſite of the coats of the ſtomach is contrary to thoſe of the guts. For that which is the innermoſt coat of the ſtomach is the outermoſt of the guts, and ſo on the contrary. The figure of the guts is round, hollow and capacious, ſome more, ſome leſs, according to the divers bigneſs. *Their ſubſtance.* *Figure.*

But for the quantity of the guts, ſome are ſmall, ſome great, more or leſs, according to the variety of bodies. But they are ſix in number: for there be three ſmall; the *Duodenum*, the *Jejunum*, or empty gut, and the *Ileon*. Three great, the Blind, the Colick, and the Right gut. All which have had their names for the following reaſons; the firſt, becauſe it is extended the length of twelve fingers, like another ſtomach, without any turning, or winding; of which greatneſs it is found in great bodied men, ſuch as were more frequently to be met withall in *Galens* time, than in this time of ours, in which this gut is found no longer than ſeven, eight, or nine fingers at the moſt. The cauſe of this length is, that there may be a free paſſage to the Gate-vein, coming out of the liver, as alſo to the artery and nerve which run into it. For ſeeing that this gut may ſometimes riſe to the top of the liver, it would poſſeſs the ſpace under the bladder of the gall (with which it is often tinctured) if it had any revolutions that way, which is the paſſage for ſuch like veſſels. Others give another reaſon of this figure, which is, that there ſhould be nothing to hinder the eaſie and fit diſtribution of the perfectly concocted *Chylus* to the liver. *Their number.* *The Duodenum.*

The ſecond is called *Jejunum*, or the empty gut, not becauſe it is abſolutely ſo, but becauſe it contains little in compariſon of the other. There is a triple cauſe of this emptineſs, the firſt the multitude of the meſeraick veins and arteries which are about it, whereupon there is a greater and quicker diſtribution of the *Chylus*. The ſecond is the vicinity or neighborhood of the liver ſtrongly drawing the *Chylus* contained in it; the third is the flowing down of the chollerick humor from the bladder of the Gall into it, which ever and anon by its acrimony cleanſes away the filth, and by continuall flowing ſolicits it to expulſion. The third is called *Ileon* becauſe it lies between the *Ilia* or flanks; it differs nothing from the reſt in ſubſtance and magnitude, but in this one thing, that there is more matter contained in it than in the reſt, by reaſon of the paucity of the veſſels terminated in it, that it is no marvell that there can be no exact demonſtration made of them. The fourth is called *Cæcum* or the blind, becauſe it hath but one paſſage to ſend out and receive in the matter. This gut hath a long and ſtrait production, which according to the opinion of ſome (though altogether erroneous) often falls down into the *Scrotum* in the rupture, or relaxation of the Rim of the Belly; for that production in the lower belly ſtrongly ſticks to the *Peritonæum* or Rim, which hinders ſuch falling down. But *Galen* ſeems by ſuch a blind gut to have meant this long and narrow production, and certainly ſo thinks the common ſort of Anatomiſts, but here *Veſalius* juſtly reprehended *Galen*. Wherefore *Sylvius* that he might free *Galen* of this fault, would have us by the blind gut to underſtand the beginning of the colick gut. The fifth is called *Colon* (or colick gut) becauſe it is greater and more capacious than the reſt. The ſixt and laſt, the Right gut, by reaſon of the rightneſs or ſtreightneſs of the paſſage. This, in beaſts eſpecially, hath a certain fatneſs in it to make the paſſage ſlippery, and leſt the gut ſhould be exulcerated in the paſſage, by the ſharpneſs of hard and acrid excrements. *The Jejunum.* *Ileon.* *Cæcum.* *Colon.* *Rectum.*

The ſite of theſe guts is thus: The *Duodenum* upon the backbone bends to the right hand; the *Jejunum* poſſeſſes a great part of the upper umbilicall region, diffuſes it ſelf into both ſides with windings, like to theſe of the gut *Ileum*, even to the flanks. The gut *Ileon* is ſituate at the lower part of the umbilicall region, going with many turnings and windings, even to the hollowneſſes of the holy-bone above the bladder and ſide parts of the *Hypogaſtrium*, they call the flanks. *Their ſite.*

The Blind bends to the right hand, a little below the kidney, above the firſt and fourth *Vertebra* of the loins. The Colon or Colick gut is crooked and bent, in the form of a *Scythian* bow, filling all the ſpace from the blind gut, below the right kidney even to the hollowneſs of the liver, and then it goes by the gibbous part of the ſtomach above the ſmall guts, even to the hollowneſs of the Spleen; from whence ſliding under the left kidney, with ſome turnings, it is terminated upon the *Vertebra's* of the loins.

By all which turnings and windings of the colick gut, it is eaſie to diſtinguiſh the pain of the ſtone of the kidneys, which remain fixt in one certain place, from the colick wandring through theſe crooked paſſages we mentioned. The right gut tends with an oblique ſite towards the left hand, upon the holy bone even to the very fundament. They have all one and a common connexion; for they are all mutually joined together by their coats, becauſe there is but one way from the gullet even to the fundament, but they are joined to the principall parts by their nerves, veins, and arteries. *The diſtinction between the colick and the ſtone in the kidneys.* *Their connexion.*

But a more proper connexion is that, where the *Duodenum* on the upper part of it, is joined

ed with the *Pylorus*; but on the lower part to the *Jejunum*, and the parts lying under it, by the coat of the *Peritonæum*. The *Jejunum*, or empty gut, is joyned to the *Duodenum* and *Ileon*. The *Ileum* with the empty and blind guts. The blind with the *Ileon* and *Colon*, and with the right side of the backbone where it is tied more straitly. The *Colon* with the blind and right guts, and in his middle part, with the kidneys and gibbous part of the stomach; whereby it comes to pass, that being distended with wind in the colick, it overturns and presses the stomach, and so causes vomiting.

Why vomiting happens in the colick.

Lastly, the right gut is annexed with the colick gut and fundament. At the end whereof there is a muscle fastened, of figure round and circular, called the *Sphincter*, arising from the lower *Vertebra's* of the holy bone and rump, by the benefit of which as of a dore or gate, the excrements are restrained at our wil, lest man born for all honest actions, without all shame, in every time and place, should be forced every where to ease his belly. For such as have lost the benefit of this muscle by the palsy, have their excrements go from them against their wills. There is a body situate at the end of the right gut, of a middle substance between the skin and flesh, as it were arising from the mixture of them both, like the extremities of the lips, of the same use with the *Sphincter*, but that it is not altogether so powerfull. But there are also certain veins situate about it called the Hæmorrhoidall, of which we will speak in their place.

The *Sphincter* muscles of the fundament.

*Gal lib. 5. de usu partium. cap. 14.*

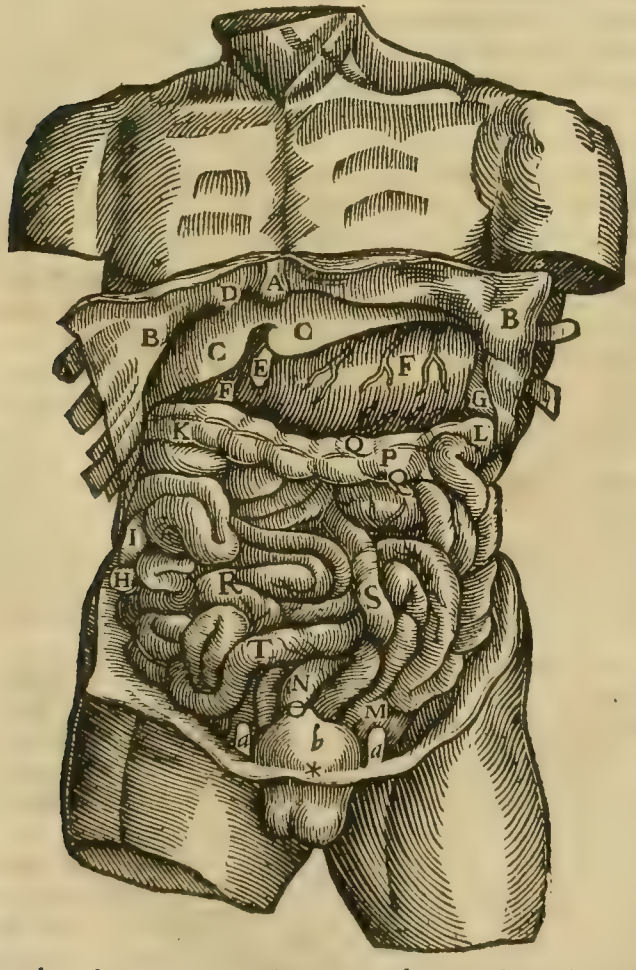
Besides there are two other muscles that descend to the end of this gut, being broad and membranous on each side, one arising from the side and inner parts of the share and hip-bones, which inserted above the *Sphincter* pull up the fundament falling down, wherefore they are called *Levatores Ani*, or the lifters up of the fundament. Wherefore when as either they are too weak, or resolved, or the fundament oppressed with the weight of flegmatick, salt, cholerick and sharp humors, the gut is scarce restored into its place, that there is need of the help of the fingers for that purpose.

*Levatores Ani.*

The guts follow the temper of the stomach. Their action is the distributing the *Chylus* by the meseraick veins (which of duty belongs to the three small guts) and the receiving the excrements of the *Chylus*, and retention of them, till a fit time of expulsion, which belongs to the third quarter. Besides, these small guts finish up the work of concoction, begun in the stomach, although they be not altogether made for that use. But nature is often accustomed to abuse the parts of the body for some better use.

The action of the guts.

*The fifth figure of the lower belly.*




A. The brest blade, *Cartilago, Ensiformis.*
BB. The Rim, with the midriffe and broken ribs bent outwards.
CC. the gibbous part of the liver.
D. a ligament tying the liver to the midriffe.
E. part of the umbilicall vein.
FF. the stomach fild full of meat.
G. a part of the spleen.
H. the blind gut of the late writers, for the Ancients took the top of the *colon* for it.
I. the beginning of the great or thick guts.
I. and so to K. sheweth the passages of the colick gut from the right kidney to the liver. And so the colick and the stone on this side are in one place, and therefore hardly distinguished.
K. to L. the same colick gut lyeth under the whole bottome of the stomach, which is the reason that those which are troubled with the colick cast so much.
L. to M. The passage of the *Colon* from the spleen to the share bone, by the left kidney, a way, which maketh the pain of the stone and the Colick on the left side very hard to distinguish. N. The *Colon* ending in the right gut. O. The beginning of the right gut unto the bladder. P. Q. The sunken or fallen side of the *Colon* at P. and his Chambers or Cels at Q. R. S. T. The lesser guts especially lying under the Navel. *a. a.* The two umbilicall arteries. *b.* The bottome of the bladder. * The connexion of the bladder and the *Peritonæum.*

But

But we muſt note, that for the compoſure of the guts, they have only tranſverſe fibers, for expulſions ſake, unleſs that at the beginning of the *Colon*, and the end of the right gut, you may ſee certain right fibers added to the tranſverſe to ſtrengthen them, leſt theſe guts ſhould chance to be broken and torn by the paſſage of hard excrements, and the laborious endeavour of expulſion (ſpecially in brute beaſts.) Their fibers.

But if any aske, how they have retention, being they want oblique fibers; he may know that the *faeces* are retained in the right gut, by the force of the *Sphincter* muſcle, but oft times in the blind, by their hardneſs and abundance, whereby they ſtick in the paſſage; but in the reſt, by reaſon of their conformation into many windings and turnings. The length of the guts, is ſeven times more than the length of the whole body; to this length they have windings, leſt the nouriſhment ſhould quickly ſlide away, and leſt men ſhould be withdrawn by gluttony from action and contemplation. For ſo we ſee it comes to paſs in moſt beaſts, which have one Gut, ſtretched ſtreight out from the ſtomach to the fundament; as in the Lynx and ſuch other beaſts of inſatiable gluttony, alwayes, like plants, regarding their food. How the guts become fit to retain. Their length.

## CHAP. XVI.

### *Of the Meſentery.*

AFter the Guts followes the Meſentery, being partly of a fatty and partly of a ſpermatick ſubſtance. The greatneſs of it is apparent enough, although in ſome it be bigger, and in ſome leſſer according to the greatneſs of the body. It is of a round figure and not very thick. It is compoſed of a double coat ariſing from the beginning and root of the *peritonæum*. In the midſt thereof it admits nerves from the Coſtall of the ſixt conjugation, veins from the *Vena Porta* or Gate vein; Arteries from the deſcendent artery, over and beſides a great quantity of fat and many glandulous bodies, to prop up the diviſion of the veſſels ſpred over it, as alſo to moiſten their ſubſtance. It is in number one, ſituate in the middle of the guts, from whence it took its name. Yet ſome divide it into two parts, to wit, into the *Meſeræum*, that is, the portion interwoven with the ſmall guts, and into the *Meſocolon* which is joyned with the Great. It hath connexion by its veſſels, with the principall parts, by its whole ſubſtance with the guts, and in ſome ſort with the kidneys, from whoſe region it ſeems to take its coats. The ſubſtance. Magnitude. Figure. Compoſure. Number. The connexion.

It is of a cold and moiſt temper, if you have reſpect to his fatty ſubſtance; but if to the reſt of the parts, cold and dry. The temper.

The action and uſe of it is, to bind and hold together the guts, each in his place, leſt they ſhould raſhly be folded together, and by the Meſeraick veins (which they term the hands of the Liver) carry the *Chylus* to the liver. The action and uſe.

In which you muſt note, that all the Meſeraick Veins come from the liver, as we underſtand by the diſſection of bodies; although ſome have affirmed, that there be ſome veins ſerving for the nouriſhment of the guts, no wayes appertaining to the Liver, but which end in certain Glandulous bodies, diſperſed through the Meſentery, of whoſe uſe we will treat hereafter. All the meſeraick veins come from the liver.

## CHAP. XVII.

### *Of the Glandules in generall, and of the* Pancreas, *or ſweet-bread.*

A Glandule is a ſimple part of the body, ſometimes of a ſpungy and ſoft ſubſtance, ſometimes of a denſe and hard. Of the ſoft Glandules are the *Tonſillæ*, or Almonds, like in ſubſtance to blanched Almonds; the *Thymus*, *Pancreas*, *Teſticles*, *Proſtatæ*. But the denſe and hard are the *Parotides* and other like. The Glandules differ amongſt theemſlves in quantity and figure, for ſome are greater than other ſome, and ſome are round and others plain, as the *Thymus* and *Pancreas*. Subſtance of the glandules. Quantity and figure.

Others are compounded of veins, nerves, arteries, and their proper fleſh, as the Almonds of the ears, the milky glandules in the breaſts and the teſticles. Others want nerves, at leaſt which may be ſeen, as the *Parotides*, the axillary, or thoſe under the armholes and others. The number of glandules is uncertain, by reaſon of the infinite multitude and variety of ſporting nature. You ſhall find them alwayes in theſe places, where the great diviſions of veſſels are made; as in the middle ventricle of the brain, in the upper part of the Cheſt, in the Meſentery and other like places. Compoſition. Number.

Although otherſome be ſeated in ſuch places, as nature thinks needfull to generate and caſt forth of them a profitable humor to the creature; as the almonds at the root of the tongue, the kernels in the dugs, the ſpermatick veſſels in the *ſcrotum* and at the ſides of the wombe; or where nature hath decreed to make emunctories for the principall parts,

as

Connexion. as behind the ears, under the armholes, and in the groins. The connexion of glandules is not only with the veſſels of the parts concurring to their compoſition, but alſo with thoſe, whoſe diviſion they keep and preſerve. They are of a cold temper, wherefore Phyſitians ſay the blood *recrudeſcere* (*i*) to become raw again in the dugs, when it takes upon it the form of milk. But of theſe ſome have action, as the almonds, which pour our ſpatle uſefull for the whole mouth, the dugs milk, the Teſticles ſeed; others, uſe only, as thoſe which are made to preſerve, underprop aud fill up the diviſions of the veſſels. Beſides this we have ſpoken of glandules in generall, we muſt know that the *Pancreas* is a glandulous and fleſh-like body, as that which hath every where the ſhape and reſemblance of fleſh. It is ſituate at the flat end of the liver, under the *Duodenum* with which it hath great connexion, and under the gate-vein, to ſerve as a bulwarke, both to it and the diviſions thereof, whilſt it fils up the empty ſpaces between the veſſels themſelves, and ſo hinders, that they be not pluckt aſunder, nor hurt by any violent motion, as a fall or the like.

Temper.
Action and uſe.
The ſubſtance of the *Pancreas*.
The ſite.

## CHAP. XVIII.

### *Of the Liver.*

HAving gone thus far, order of diſſection now requires, that we ſhould treat of the diſtribution of the gate-vein; but becauſe it cannot well be underſtood unleſs all the nature of the liver from whence it ariſes, be well known, therefore putting it off to a more fit place, we will now ſpeak of the Liver. Wherefore the Liver (according to *Galens* opinion, *lib. de form. fœtus*) is the firſt of all the parts of the body, which is finiſhed in conformation, it is the ſhop and Author of the blood, and the originall of the veins; the ſubſtance of it, is like the concrete mud of the blood, the quantity of it is divers, not only in bodies of different, but alſo of the ſame ſpecies; as in men amongſt themſelves, of whom one will be gluttonous and fearfull, another bold, and temperate, or ſober; for he ſhall have a greater liver than this, becauſe it muſt conceive and concoct a greater quantity of *Chylus*: yet the liver is great in all men, becauſe they have need of a great quantity of blood for the repairing of ſo many ſpirits and the ſubſtantifick moiſture, which are reſolved and diſſipated in every moment by action and contemplation. But there may be a twofold reaſon given, why ſuch as are fearfull have a larger liver. The firſt is, becauſe in thoſe the vitall faculty (in which the heat of courage and anger reſides) which is in the heart, is weak; and therefore the defect of it muſt be ſupplyed by the ſtrength of the naturall faculty. For thus nature is accuſtomed to recompence that which is wanting in one part, by the increaſe and acceſſion of another. The other reaſon is, becauſe cold men have a great appetite, for by *Galens* opinion *In arte parva*, coldneſs increaſes the appetite; by which it comes to paſs that they have a greater quantity of *Chylus*, by which plenty the liver is nouriſhed and grows larger. Some beaſts, as Dogs, and ſwine, have the liver divided into five or more Lobes, but a man hath but one Lobe, or two, or three at the moſt; and theſe not ſo much diſtinguiſhed, as which cheriſh the upper and hollow region of the ventricle, with embracing to help forward the work of concoction. Therefore the liver is almoſt content with one Lobe, although it is alwayes rent with a ſmall diviſion, that the umbilicall vein piercing into the roots and ſubſtance of it, may have a free paſſage; but alſo oftentimes there is as it were a certain ſmall lobe of the liver, laid under that umbilicall vein, as a cuſhion.

What the liver is.
Its ſubſtance and quantity.
Why cowards have great livers.

The figure of the liver is gibbous; riſing up and ſmooth towards the Midriffe; towards the ſtomach is the *ſimous* or hollow ſide of it ſomewhat unequall, and rough by reaſon of the diſtance of the Lobes, the original of the hollow vein, and the ſite of the bladder of the Gall.

The figure.

The compoſition of the liver is of veins, nerves, arteries, the coat and proper ſubſtance thereof which we call the groſs and concrete blood, or *Parenchima*. Veins and arteries come to it from the navill; but nerves immediately from theſe which are diffuſed over the ſtomach according to *Hippocrates*; yet they penetrate not very deep into its ſubſtance, for it ſeems not to ſtand in need of ſuch exact ſenſe, but they are diſtributed upon the coat and ſurface thereof, becauſe this part made for diſtribution over the whole body, keeps to it ſelf no acrid or malign humor; for the perception of which it ſhould need a nerve, although the coat inveſting it, ſends many nervous fibers into its ſubſtance, as is apparent by the taking away of the coat from a boiled liver; we muſt think the ſame of the other entrails. The coat of the liver is from the *Peritonæum*, waxing ſmall from the umbilicall vein, when it divides it ſelf for the generation of the gate and hollow veins, as is obſerved by *Galen*, *Lib. de format. Fœtus*. The liver is only one, ſituate in the greater part on the right ſide, but with the leſſer part on the left, quite contrary to the ſtomach. Its chief connexion is with the ſtomach and guts, by the veins and membranes of the *Peritonæum*; by the hollow vein and artery, with the heart; by the nerve with the brain, and by the ſame ligatures with all the parts of the whole body. It is of a hot and moiſt temper, and ſuch as have it more hot, have large veins and hot blood; but ſuch as have it cold, have ſmall veins, and a diſcoloured hew.

The compoſure.
The veſſels.
The number and ſite.
The connexion.
The temper.

shew. The action of the Liver is the conversion of *Chylus* into the blood, the work of the second concoction. For although the *Chylus* entring into the meseraick veins, receive some resemblance of blood, yet it acquires not the form and perfection of blood, before it be elaborate, and fully concoct in the liver. It is bound and tyed with three strong ligaments, two on the sides in the midst of the bastard ribs, to bear up its sides, and the third more high and strong, descending from the breast-blade, to sustain its proper part, which with its weight would press the lower orifice of the stomach, and so cause a falling or drawing down of the sternon and coller bone. And thus much may suffice for its proper ligaments, for we before mentioned its common; the veins, arteries, nerves, and coat of the *Peritonæum*, by which it is knit to the loins and other naturall parts. But we must note, that besides these three proper ligaments, the liver is also bound with others to the bastard ribs; as *Sylvius* observes in his Anatomicall observations, and *Hollerius* in his Practise, *Cap. de pluritide*.

The action.

The ligaments.

## CHAP. XIX.

### *Of the bladder of the Gall.*

NOw we must come to the bladder of the Gall, which is of a nervous substance, and of the bigness of a small pear; it is of figure round, with the bottom more large, but the sides and mouth more narrow and strait. It is composed of a double coat, one proper, consisting of three sorts of fibers, the other from the *peritonæum*. It hath a vein from the *Porta* or gate-vein, and an artery from that which is diffused into the liver, and a nerve from the sixt conjugation. It is but one and that hid on the right side under the greater lobe of the liver, it is knit with the touching of its own body, and of the passages and channels made for the performance of its actions with the liver, and in like manner with the *Duodenum*, and not seldome with the stomach also, by another passage; and to conclude to all the parts by its veins, nerves, arteries, and common coat. It is of a cold temper, as every nervous part is. The action of it is to separate from the liver the cholerick humor, and that excrementitious, but yet naturall by the help of the right fibers, for the purifying of the blood, and by the oblique fibers, so long to keep it being drawn, untill it begin to become troublesome in quantity, or quality, or its whole substance, and then by the transverse fibers, to put it down into the *Duodenum* to provoke the expulsive faculty of the guts. I know *Fallopius* denies the texture of so many fibers, to be the minister of such action to the gall. But *Vesalius* seems sufficiently to have answered him. The bladder of the gall hath divers channells, for coming with a narrow neck, even to the beginning of the Gate-vein, it is divided into two passages, the one whereof suffering no division is carryed into the *Duodenum*, unless that in some it send another branch into the bottome of the stomach, as is observed by *Galen*; which men have a miserable and wretched life, being subject to cholerick vomitings, especially when their stomachs are empty, with great pains of their stomach and head, as is also observed by *Galen*, *Cap.* 74. *Artis Med.* The other coming out of the body of the liver divides it self into two or three passages, again entring the substance of the liver, is divided with infinite branches, accompanying so many branches of the Gate-vein through the substance of the liver, that so the blood unless it be most elaborate and pure, may not rise into the hollow vein, all which things Dissection doth manifestly teach.

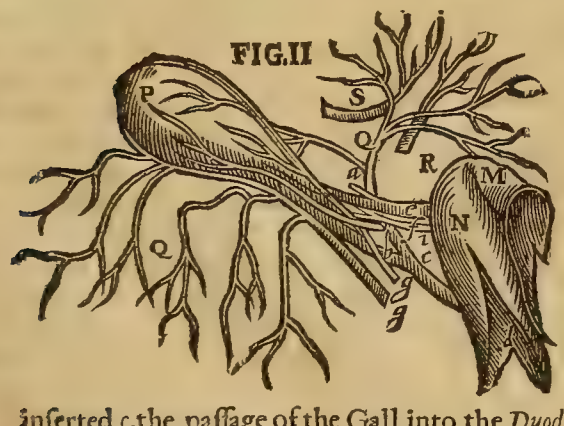
The substance, greatness, and figure thereof. The composition, Number and connexion.

Temper. Action.

The channells of the gall.

*Lib. 2. de temper.*

*The sixth Figure of the bladder of the Gall.*




M. the *Pylorus* joyned to the *Duodenum*.
N. the *Duodenum* joyned to the *Pylorus*.
P. shews the bottom of the bladder of the gall.
Q Q. the holes of the bladder of gall dispersed through the liver, betwixt the roots of the hollow and Gate-veins. R. the root of the Gate vein in the liver. S. the root of the hollow vein in the liver. *a*. the concourse or meeting of the passages of choler into one branch. *b*. the neck of the bladder into which the passage is inserted. *c*. the passage of the Gall into the *Duodenum*. *d*. the *Duodenum* opened, to manifest the insertion of the *porus biliaris*. *e*. an artery going to the hollow part of the liver, and the bladder of the gall. *f*. a small nerve belonging to the liver and the bladder of gall, from the rib branch of the sixth pair. *gg*. the cistick twins from the gate-veins.

## CHAP. XX.

### *Of the Spleen or Milt.*

The ſubſtance.

BUt becauſe we cannot well ſhew the diſtribution of the gate-vein, unleſs the Spleen be firſt taken away, and removed from its ſeat: therefore before we go any further, I have thought good to treat of the Spleen. Therefore the Spleen is of a ſoft, rare, and ſpongious ſubſtance (whereby it might more eaſily receive and drink up the dregs of the blood from the liver) and of a fleſh more black than the liver. For it reſembles the colour of its muddy blood, from which it is generated. It is of an indifferent greatneſs; but bigger in ſome, than in otherſome, according to the diverſe temper and complexion of men. It hath as it were a triangular figure, gibbous on that part, it ſticks to the ribs and midriffe, but hollow on that part next the ſtomach. It is compoſed of a coat, the proper fleſh; a vein, artery, and nerve. The membrane comes from the *Peritonæum*, the proper fleſh from the *fæces* or dregs of bloud, or rather of the naturall melancholy humour, with which it is nouriſhed. The fourth branch of the *vena porta*, or gate vein, lends it a vein; the firſt branch of the great deſcendent artery preſently, after the firſt entrance without the Midriff, lends it an artery. But it receives a nerve, from the left coſtall, from the ſixt conjugation on the inner part, by the roots of the ribs; and we may manifeſtly ſee this nerve, not only diſperſing it ſelf through the coat of the liver, but alſo penetrating with its veſſels the proper fleſh thereof, after the ſelf ſame manner, as we ſee it is in the heart and lungs. It is one in number, ſituate on the left ſide, between the ſtomach and the baſtard ribs, or rather the midriffe which deſcends to their roots. For it oft times cleaves to the midriffe, on its gibbous part, by a coat from the *Peritonæum*, as alſo on the hollow part to the ſtomach, both by certain veins which ſends it into the ventricle, as alſo by the kall. It hath connexion, either primarily, or ſecundarily, with all the parts of the body, by theſe its veſſels.

Magnitude. Figure. Compoſition. Number and Site. Connexion.

Temper and uſe.

It is of a cold and drie temper; the action and uſe of it is to ſeparate the melancholick humor, which being feculent and droſſie, may be attenuated by the force of many arteries diſperſed through its ſubſtance. For by their continuall motion, and native heat, which they carry in full force with them from the heart, that groſs blood puts off its groſneſs, which the Spleen ſends away by paſſages fit for that purpoſe, retaining the ſubtler portion for its nouriſhment. The paſſages by which it purges it ſelf from the groſneſſe of the melancholy bloud, are a vein aſcending from it into the ſtomach to ſtir up the appetite by its tourneſſe, and ſtrengthen the ſubſtance thereof by its aſtriction; and alſo another vein, which ſometimes from the Spleen branch, ſometimes from the Gate-vein, plainly under its orifice, deſcends to the fundament, there to make the Hæmorrhoidall veins.

## CHAP. XXI.

### *Of the* Vena Porta, *and Gate-vein, and the diſtribution thereof.*

The ſubſtance and figure. Compoſition. Number and Site.

THe gate-vein, as alſo all the other veins, is of a ſpermatick ſubſtance, of a manifeſt largeneſs, of a round and hollow figure, like to a pipe or quill. It is compoſed of its proper coat, and one common from the *Peritonæum*. It is only one, and that ſituate in the ſimous or hollow part of the liver, from whence it breaks forth (or rather out of the umbilicall vein) into the midſt of all the guts, with which it hath connexion, as alſo with the ſtomach, ſpleen, *ſphincter* of the fundament and *Peritonæum*, by the coat which it receives from thence. It is of a cold and dry temper. The Action of it is, to ſuck the *Chylus* out of the ventricle and guts, and ſo to take and carry it to the Liver, untill it may carry back the ſame turned into blood for the nutriment of the ſtomach, ſpleen and guts. This gate-vein coming out of the ſimous part of the Liver, is divided into ſix branches, that is, four ſimple, and two compound, again divided into many other branches. The firſt of the ſimple aſcends from the forepart of the trunk to the bladder of the Gall by the paſſage of the Choler (and are marked with *g. g.*) with a like artery for life and nouriſhment, and this diſtribution is knowne by the name of *Cyſticæ gemellæ* or Cyſtick twins. The ſecond is called the *Gaſtrica* or ſtomach vein, ariſing in like manner from the forepart of the trunk, is carried to the *Pylorus* and the ſimous or back part of the ſtomach next to it.

Temper and Action.

Diviſion thereof into 6 branches, of which. 4 ſimple.

1 *Cyſticæ gemellæ*

2 *Gaſtrica.*

The third is called *Gaſtrepiploïs*, the ſtomach and kall vein, which coming from the right ſide of the gate-vein goes to the gibbous part of the ſtomach next to the *Pylorus* and the right ſide of the kall.

3 *Gaſtrepiploïs.*

The fourth going forth from behind and on the right hand of the gate-vein, aſcends above the root of the Meſeraick branch even to the beginning of the gut *Jejunum*, along the gut *Duodenum*, from whence it is called *Inteſtinalis*, or the gut vein. And theſe

4 *Inteſtinalis.*

are

are the foure ſimple branches. Now we will ſpeak of the compound.

To compound.

The firſt is the ſplenick, which is divided after the following manner. For in its firſt beginning and upper part, it ſends forth the *Coronalis*, or crowne vein of the ſtomach, which by the back part of the ſtomach aſcends into the upper and hollow part thereof; to which place, as ſoon as it arrives, it is divided again into two branches, the one whereof climbs up even to its higher orifice, the other deſcends downe to the lower, ſending forth by the way other branches to the fore and back parts of the ſtomach. Theſe engirt and on every ſide incompaſs the body of the ventricle, for which cauſe they are named the crown veins.

1 *Ramus ſplenicus* ſending forth.

1 *Coronalis.*

I have ſometime obſerved this comming forth of the trunk, a little above the orifice of the ſplenick branch. But this ſame ſplenick branch on its lower part, produces the branch of the Hæmorrhoidall veins, which deſcending to the fundament above the left ſide of the loines, diffuſes a good portion thereof into the leaſt part of the colick gut, and the right gut, at the end whereof it is often ſeen to be divided into five Hæmorrhoidall veins, ſometimes more, ſometimes leſs.

2 *Hæmorrhoidalis interna.*

*Silvius* writes that the Hæmorrhoidall branch deſcends from the meſenterick, and truly we have ſometimes obſerved it to have been ſo. Yet it is more ſutable to reaſon, that it ſhould deſcend from the ſplenick, not only for that we have ſeen with our eyes that it is ſo, but alſo becauſe it is appointed by nature for the evacuation of the excrementitious melancholick humor. But this ſame ſplenick branch out of the middle almoſt of its upper part produces the third branch going to the gibbous part of the ſtomach, and the kall; they terme it the greater, middle and left *Gaſtrepiploïs*. But on the lower part towards the ſpleen it produces the ſimple *Epiploïs*, or kall-vein, which it diffuſes through the left ſide of the kall. Moreover from its upper part, which touches the liver, it ſends forth a ſhort branch called *vas breve*, or *venoſum*, to the upper orifice of the ventricle for ſtirring up the appetite.

3. *Gaſtrepiploïs major ſiniſtra.*

4. *Epiploïs ſimplex.*

5. *Vas breve ſeu venoſum.*

We have oftentimes and almoſt alwayes obſerved, that this venie veſſell, which *Galen* cals *vas breve*, comes from the very body of the ſpleen, and is terminated in the midſt of the ſtomach on the left ſide, but never pierces both the coats thereof. Wherefore it is ſomewhat difficult to find, how the melancholy juyce can that way be powred, or ſent into the capacitie of the ſtomach. Now the ſplenick branch, when it hath produced out of it thoſe five forementioned branches, is waſted and diſperſed into the ſubſtance and body of the ſpleen.

*Lib. 4. de uſu partium.*

Then followes another compound branch of the *vena porta*, called the meſenterick, which is divided into three parts; the firſt and leaſt whereof goes to the blind gut and to the right and middle part of the colick-gut, divided into an infinite multitude of other branches. The ſecond and middle is waſted in the *Ileon*; as the third and greater in the *Iejunum* or empty gut. It is called Meſenterick becauſe it is diffuſed over all the Meſentery; as the ſplenick is in the ſpleen. And thus much we have to ſay of the diviſion of the gate vein, the which if at any time thou ſhalt find to be otherwiſe, than I have ſet downe, you muſt not wonder at it; for you ſhall ſcarce find it the ſame in two bodies, by reaſon of the infinite varietie of particular bodies, which (as the Philoſophers ſay) have each their owne, or peculiar gifts. Our judgment is the ſame of other diviſions of the veſſels. Yet we have ſet down that which we have moſt frequently obſerved.

2 *Ramus meſentericus* devided into three parts.

## CHAP. XXII.

*Of the originall of the Artery, and the diviſion of the branch, deſcending to the naturall parts.*

THoſe things being thus finiſhed and conſidered, the guts ſhould be pulled away; but ſeeing that if we ſhould do ſo, we ſhould diſturb and loſe the diviſion of the artery deſcending to the naturall parts; therefore I have thought it better to handle the diviſion thereof, before the guts be pluckt away. Therefore we muſt ſuppoſe, according to *Galens* opinion, that as all the veins come from the liver, ſo all arteries proceed from the heart. This preſently at the beginning is divided into two branches, the greater whereof deſcends downwards to the naturall parts upon the ſpine of the back, taking its beginning at the fifth *vertebra* thereof, from whence it goes into the following arteries. The firſt called the intercoſtall, runs amongſt the intercoſtall muſcles, and the diſtances of the ribs, and ſpinall marrow, through the perforations of the nerves on the right and left hand from the fifth true, even to the laſt of the baſtard ribs.

The originall of arteries.

The diviſion of the great deſcendent artery, is into theſe.

This in going this progreſs makes 7. little branchings, diſtributed after the forementioned manner, and going forth of the trunk of the deſcendent over againſt each of the intercoſtall Muſcles.

1 *Arteria intercoſtalis.*

The ſecond being parted into two goes on each ſide to the Midriffe, whence it may be called, or expreſſed by the name of the *Diaphragmatica* or *Phrenica*, (*i*) the midriffe artery. The third being of a large proportion, ariſing from the upper part of the arterie preſently after it hath paſſed the midriffe, is divided into two notable branches, whereof on goes to the ſtomach, ſpleen, kall, to the hollow part of the liver and the gall; the other is ſent forth to the meſen-

2 *Phrenicæ.*

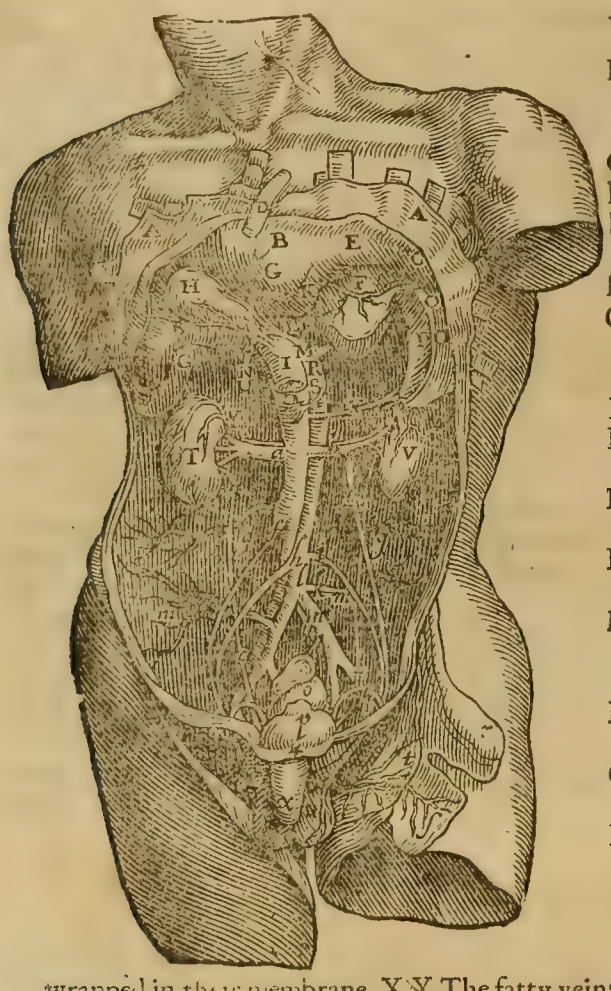
3. *Caliacæ.*

meſentery and guts after the ſame manner, as we ſaid of the meſeraick veins, wherefore it is called the *Cœliaca*, or ſtomach artery. But we muſt note, all their mouths penetrate even to the innermoſt coat of the guts, that by that means they may the better and more eaſily attract the *Chylus* contained in them.

4. *Emulgent.* The fourth is carryed to the reins, where it is named the Reinall or Emulgent, becauſe it ſucks fit matter from the whole maſs of blood.

5. *Spermatica.* The fifth is ſent to the teſticles with the preparing Spermatick veins, whence alſo it is named the Spermatick Artery, which ariſes on the right ſide, from the very trunk of the deſcendent Artery; that it may aſſociate the ſpermatick vein of the ſame ſide, they run one above another, beneath the hollow vein, wherefore we muſt have a great care whilſt we labour to lay it open, that we do not hurt and break it.

*The ſeventh figure of the lower Belly.*




A, A, The midriffe turned back with the ribs and the *peritonæum.*
BB, The cave or hollow part of the liver, for the liver is lifted up that the hollow part of it may be better ſeen.
C, The leaſt ligament of the liver.
D, The Umbilicall vein.
E, The hollowneſs in the liver, which giveth way to the ſtomach.
F, The left orifice of the ſtomach.
G G, Certain knubs, or knots, and impreſſions in the hollow part of the liver.
H, The bladder of gall.
I, The Gate-vein, cut off, and branches which go to the bladder of gall.
K, A nerve of the liver coming from the ſtomachicall nerve.
L, An Artery common to the liver and bladder of gall.
M, A Nerve common alſo to them both, coming from the right *coſtall* Nerve of the ribs.
N, the paſſage of the Gall to the Guts cut off.
O O, The hollow of the fore parts of the Spleen.
P, The line where the veſſels of the Spleen are implanted. Q. The trunk of the hollow vein. R, The trunk of the great Artery. S, The *Cœliacall* Artery cut off. T, V, The Kidneys yet wrapped in their membrane. X, Y, The fatty veins called *venæ adipoſæ. a, b,* The Emulgent veins with the Arteries under them. *c c, d d,* The Ureter from either kidney to the bladder. *e, f,* The ſpermaticall veins to the teſticles, the right from the hollow vein, the left from the Emulgent. *g, g,* Veins coming from the ſpermaticall to the *peritonæum. h, i,* the ſpermaticall Arteries. *k,* The lower meſentericall Artery. *l,* The aſcending of the great Artery above the hollow vein, and the diviſion of it, and the hollow vein into two trunks. *m,* the Arteries of the loins called *lumbaris. n,* The holy Artery called *Sacra. o,* A part of the right gut. *p,* The bladder of Urine. * The connexion of the bladder with the *peritonæum. q,* A part of the veſſels which lead the ſeed from the Teſticles, is here reflected. *r, ſ,* the *ſcrotum*, or cod, that is, the skin that inveſts the yard and teſticles. *t,* The fleſhy pannicle or membrane which is under the cod. *u,* The coat which is proper to the teſticles with his veſſels. *x,* A part of the yard excoriated or flayed, and hanging down.

*Hæmorrhoidalis ſeu meſenterica inferior.* The ſixth going from the fore and upper part of this deſcendent arterie, deſcends with the Hæmorrhoidall veins to the fundament; preſently from his beginning, ſending forth certain branches alongſt the colick gut, which by *Anaſtomaſis* are united with other branches of the *Cœliacall* Arteries; for whoſoever ſhall look more attentively, he ſhall often obſerve that veins are ſo united amongſt themſelves, and alſo Arteries, and ſometimes alſo the veins with the Arteries. For an *anaſtomaſis* is a communion and communicating of the veſſels amongſt themſelves, by the application of their mouths, that ſo by mutuall ſupplies they may eaſe each others defects. But they call this the lower meſeraick Artery.

7. *Lumbaris.* The ſeventh proceeding from the trunk with ſo many branches as there be *Vertebra's*

in

in the loines,goes to the loines and the parts belonging to them, that is, the ſpinall marrow of that part,and other parts encompaſſing theſe *Vertebra's*, whereupon it is ſtiled the *Lumbaris* or Loine Artery.

The eight maketh the Iliack arteries, untill ſuch time as it departs from the *Peritonæum* where the Crurall Arteries take their originall. This Iliack Artery ſends many divarications towards the Holy bone where it takes its beginning,and to the places lying neer the Holy bone,which becauſe they run the ſame courſe as the Iliak veins, for brevities ſake, we will let paſs further mention of them,till we come to treat of the Iliack veins. *Iliaca*

## CHAP. XXIII.

*Of the diſtribution of the Nerves to the naturall parts.*

IT remains,that before the bowels be taken away, we ſhew the nerves ſent to the entrails and natural parts,that as wiſe and provident men we may ſeem to have omitted nothing.Firſt we muſt know that theſe nerves are of the ſixt conjugation,which deſcend as well to the ſtomach all alongſt the Gullet and the ſides thereof,as thoſe at the roots of the ribs on both ſides within. But when they are paſſed through the Midriffe,thoſe which are diſtributed amongſt the naturall parts follow the turnings of the veins and arteries, but ſpecially of the arteries. Wherefore if you have a mind to follow this diſtribution of the nerves, you muſt chiefly look for it in thoſe places, in which the artery is diſtributed amongſt the Guts above the loins. The originall of the nerves which are carryed to the naturall parts.

Theſe nerves are but ſmall, becauſe the parts ſerving for nutrition, needed none but little nerves,for the performance of the third duty of the nerves,which is in the diſcerning & knowing of what is troubleſome to them. For unleſſe they had this ſenſe, there is nothing would hinder, but theſe bowels neceſſary for life,being poſſeſſed with ſome hurtfull thing, the creature ſhould preſently fall down dead; but we have this benefit by this ſenſe, that as ſoon as any thing troubles and vellicates the bowels, we being admoniſhed thereof may look for help in time. Their magnitude and uſe.

And beſides if they were deſtitute of this ſenſe,they might be gnawn, ulcerated and putrefied by the raging acrimony of the excrements falling into and ſtaying in them;but now (by means hereof) as ſoon as they find themſelves pricked, or pluckt,preſently by the expulſive faculty they endeavour to expell that which is troubleſome, and ſo free themſelves of preſent and future dangers.

## CHAP. XXIIII.

*The manner of taking out the Guts.*

WHen the Guts are to be taken out,you muſt begin with the right Gut. And you muſt divide it,being firſt ſtraitly tyed in two different places, at a juſt diſtance about four fingers from the end, with a ſharp knife between the two ligatures. Then you muſt ſhew its proper coats,and fibers,and that common one which it hath from the *Peritonæum*. This being done, you muſt in like manner bind the trunk of the gate veine as neer the originall as you can;that ſo all his branches being in like manner tyed there may be no feare of effuſion of blood;you muſt doe the like with the Cœliack Artery at the left Kidney,and in the lower Meſenterick, which deſcends to the right Gut with the Hæmorrhoidall veins.This being done, pull away the guts even to the *Duodenum*, which being in like manner tyed in two places, which ought to be below the inſertion of the *Porus Cholagogius* or paſſage of the Gall,that you may ſhew the oblique inſertion thereof into that gut,for the obliquity of its inſertion is worth obſervation, as that which is the cauſe that the Gall cannot flow back into its bladder, by the compreſſion of this Gut from below upwards.Then all theſe windings of the Guts may be taken away from the body.

## CHAP. XXV.

*The Originall and diſtribution of the deſcendent Hollow veine.*

BEcauſe the reſt of the naturall parts, do almoſt all depend upon the deſcendent Hollow vein,therefore before we goe any further,we will ſhew its originall and diſtribution.We ſaid before that all veins proceeded from the Liver, but yet in divers places.For the gate vein goes out of the hollow part, and the hollow vein out of the Gibbous part of the liver, which going forth like the body of a tree,is divided into two great branches,the leſſer of which goes to the vital & animal parts, The originall of the hollow veine. It is divided into two trunks.

and the extremeties of theſe parts, as we ſhall ſhew in their place. The greater deſcending from the back part of the Liver above the *Vertebra's* of the loins to the parts beneath, goes in the manner following. The firſt diviſion thereof is to the membranes of the reins, which come from the *Peritonæum*. Wherefore there it produces the *Venæ adipoſæ*, or fatty veins, ſo called, becauſe they bring forth a great quantity of fat in thoſe places; Of theſe fatty veins, there is a diverſe originall, for the right doth oftentimes ariſe from the right emulgent, becauſe it is higher; but the leſs comes from the very trunck of the hollow vein becauſe the Emulgent on that ſide is lower, and you ſhall ſcarſe ſee it happen otherwiſe.

The diviſion of the greater branch of the hollow vein.

1. *Adipoſa.*

2. *Emulgent.*

The ſecond being the Kidney or Emulgent veins, go to the Reins, which at their entrance, or a little before, is divided into two branches, like as the Artery is, the one higher, the other lower, and theſe again into many other through the ſubſtance of the Kidneys, as you may learn better by ocular inſpection, than by book. They are thick and broad, that the ſerous humor may without impediment have freer paſſage. Their originall is different, for the right Emulgent oftentimes comes forth of the hollow vein ſomewhat higher than the left; that ſeeing their office and duty is to purge the maſs of blood from the cholerick and ſerous humor, that if any part thereof ſlide by the one, it may not ſo ſcape, but fall as it were into the other. Which certainly would not have happened if they had been placed the one juſt oppoſite to the other. For the ſerous or wheyiſh humor would have ſtayed as equally ballanced or poiſed, by reaſon of the contrariety of the action and traction, or drawing thereof. But we muſt remember that in diſſecting of bodies, I have oft-times found in ſuch as have been troubled with the ſtone, ſeven Emulgent veins and ſo many arteries; four from the left ſide coming from divers places, of which the laſt came from the Iliack; three from the right hand likewiſe in divers places.

3. *Spermatica.*

The third diviſion is called the Spermatick or ſeed vein, it goes to the Teſticles; the originall thereof is thus, that the right ariſes on the forepart of the trunck of the hollow vein; but the left moſt commonly from the Emulgent. Beſides you ſhall ſometimes find that theſe have companions with them, to the right Emulgent; but to the left, another from the hollow vein, in ſome but on one ſide, in others on both. But alſo I have ſometimes obſerved the left emulgent to proceed from the ſpermatick or ſeed vein.

4. *Lumbaris.*

The fourth becauſe it goes to the loins is called *Lumbaris*; which in his originall and inſertion is wholly like the Artery of the loins. But there are 4 *Lumbares* or Loin-veins on each ſide, that is, one in each of the 4 ſpaces of the 5 *Vertebra's* of the loins.

5. Iliacæ which are divided into.

The fift diviſion makes the *Iliacæ*, untill paſſing through the *Peritonæum*, they take the names of Crurall veins; Theſe are firſt divided into the muſculous, ſo called, becauſe they goe to the oblique aſcendent and tranſverſe muſcles, and to the *Peritonæum*. Sometimes they have their originall from the end of the Trunk. And then the ſame *Iliacæ*, are divided into the *Sacræ*, or Holy; which goe to the ſpinall marrow of the Holy-bone, through thoſe holes, by which the nerves generated of this marrow, have their paſſage.

1. Muſculoſæ.

2. Sacræ.

3. *Hypogaſtricæ*, which produce the Hæmorrhoidales externæ.

Thirdly, the *Iliacæ* are divided into the *Hypogaſtricæ*, ſo called, becauſe they were diſtributed to all the parts of the *Hypogaſtrium*, or lower part of the lower belly, as to the right Gut, the muſcles thereof, the muſculous skin, (in which place they often make the externall Hæmorrhoidall, ordained for the purging of ſuch blood as offends in quantity, as thoſe other, [that is, the inward Hæmorrhoidall] which deſcends to the right Gut from the Gate-vein by the ſpleenick branch, ſerves for cleanſing of that which offends in quality,) to the bladder and the neck thereof, even to the end of the yard, to the womb and even to the neck of the wombe and utmoſt parts of the privities, from whence it is likely the courſes break forth in women with child and Virgins. But this ſame vein alſo ſends a portion alſo without the *Epigaſtrium* by that perforation which is common to the ſhare and haunch bones, which ſtrengthened by meeting of the other internall Crurall vein deſcends even to the Ham, but in the mean time by the way it is communicated to the muſcles of the thigh called *Obturatores* and other parts within. Fourthly, the *Iliacæ* produce the *Epigaſtricæ* which on both ſides from below aſcend according to the length of the right muſcles, ſpreading alſo by the way ſome branches to the oblique and tranſverſe muſcles and alſo to the *Peritonæum*. Fiftly, theſe produce *Iliacæ* the *Pudendæ* or veins of the privities, becauſe they go in women to their privities, and into men to the Cods, where they enter that fleſhy coat filled with veins, and go to the skin of the yard, they take their beginning under the *Hypogaſtricæ*.

4. *Epigaſtricæ*

5. *Pudendæ.*

CHAP.

## CHAP. XXVI.

### *Of the Kidneys or Reins.*

NOw follow the Kidneys, which that they may be more eafily ſeen, (after that you have diligently obſerved their ſituation) you ſhall diſpoil of their fat, if they have any about them, as alſo of the membrane they have from the *Peritonæum*. Firſt, you ſhall ſhew all their conditions, beginning at their ſubſtance.

Their ſubſtance. The ſubſtance of the Kidneys is fleſhy, denſe and ſolid, leſt they ſhould be hurt by the ſharpneſs of the urine. Their magnitude is large enough, as you may ſee. Their figure is ſomewhat long and round almoſt reſembling a ſemicircle, and they are lightly flatted above and below. They are partly hollow and partly gibbous; the hollow lies next the hollow vein, and on this ſide they receive the Emulgent veins and Arteries, and ſend forth the Ureters, their gibbous part lies towards the loins. They are compoſed of a coat coming from the *Peritonæum*, their own peculiar fleſh, with the effuſion of blood about the proper veſſels, (as happens alſo in other entrails) generates a ſmall nerve, which ſpringing from the Coſtall of the ſixt conjugation is diffuſed to each Kidney on his ſide into the coat of the kidney it ſelf, although others think it alwayes accompanies the vein and artery.

Magnitude. Figure.

Compoſition.

*The ninth and tenth figure of the veſſels of ſeed and urine.*

FIG. II.

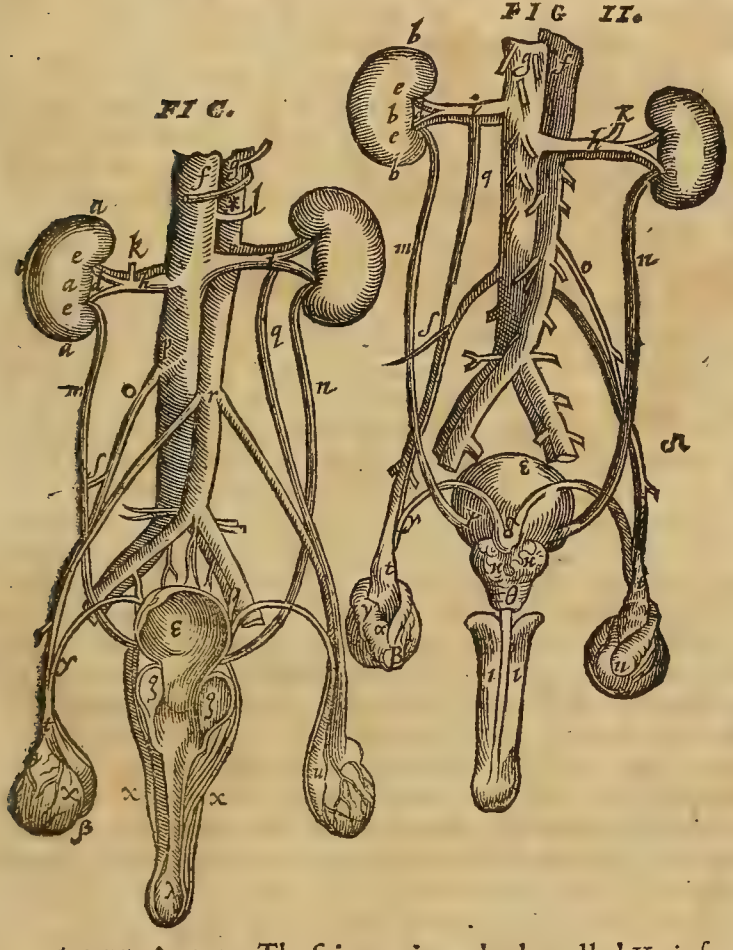


FIG.



The firſt figure ſheweth the foreſide, the ſecond the hinder-ſide.

*a.a.a.* 1. The forepart of the right kidney.

*b. b. b.* 2. The back part of the left kidney.

*e.* 1. the outſide.

*d. d.* 1, 2. The inner-ſide.

*e. e.* 1, 2. The two cavities whereinto the emulgent veſſels are inſerted.

*f. f.* 1, 2. The trunk of the hollow vein.

*g. g.* 1, 2. The trunk of the great artery.

*h. i.* 1, 2. The emulgent vein and artery.

*k. k.* 1, 2. The right fatty vein.

*l.* 1. The left fatty vein.

*. 1. The Cœliacall artery.

*m. n.* 1, 2. The ureters.

*o. p. q.* 1, 2. The right ſpermatick veine which ariſeth neer *p*. the left neer *q*.

*r. i.* The place where the Arteries of the ſeed ariſe.

*ſ.* 1, 2. Small branches diſtributed from the ſpermaticall veins to the *Peritonæum*. *t.* 1, 2. The ſpiry varicous body, called *Varicoſum Vas pyrimidale*. *u.* 1, 2. The *Paraſtatæ*, or *Epididymis*. *x.* 1. The teſticle yet covered with its coat. *y.* 1, 2. The place where the leading veſſell called *vas deferens*, doth ariſe. *α*, 1, 2. The deſcent of the ſame leading veſſell. *β*, 1, 2. The revolution of the ſame leading veſſell. *γ*, 1, 2. The paſſage of the ſame veſſell, reflected like a recurrent nerve. *δ* 2. The meeting of the ſame leading veſſels. *ε*, 1, 2. The bladder of urine, the firſt figure ſheweth it open, the ſecond ſheweth the back parts. *ζζ*, 1. The ſmall bladder of the ſeed opened. *η,η*, 2. The Glandules called *Glandulæ Proſtatæ*. *θ*, 1. The Sphincter muſcle of the bladder. *ι*, 1, 2. The two bodies which make the ſubſtance of the yard. *κ,κ*, 1. The veſſels which go unto the yard and neck of the bladder. *λ*, 1. The paſſage which is common to the urine and ſeed, cut open. *Ψ*, 2. The implantation of the ureters into the bladder.

But *Fallopius* that moſt diligent Author of Anatomy hath obſerved, that this nerve is not only oftentimes divaricated into the coat of the kidneys, but alſo pierces into their ſubſtance,

Number. Site.

ſtance. They are two in number, that if the one of them ſhould by chance be hurt, the other might ſupply thoſe neceſſities of nature, for which the Kidneys are made. They lye upon the loyns at the ſides of the great veſſels, on which they depend by their proper veins and arteries; and they ſtick to them, as it were by a certain ſecond coat, leſt that they might be ſhaken by any violent motions. Wherefore we may ſay that the Kidneys have two coats, one proper adhering to their ſubſtance, the other as it were coming from the *Peritonæum* on that part they ſtick to it. The right Kidney is almoſt alwayes the higher, for thoſe reaſons I gave, ſpeaking of the originall of the Emulgent veſſels. *Columbus* ſeems to thinke the contrary, but ſuch like controverſies may be quickly decided by the Eye. They have connexion with the Principall veſſels by the veins, nerves and arteries, by the coats with the loins & the other parts of the lower belly, but eſpecally with the bladder by the ureters. They are of a hot and moiſt temper, as all fleſhy parts are. Their action is to cleanſe the Maſſe of the blood from the greater part of the ſerous and cholerick humor. I ſaid the greater part, becauſe it is needfull that ſome portion thereof ſhould go with the alimentary blood to the ſolid parts, to ſerve in ſtead of a vehicle, leſt otherwiſe it ſhould be too thick.

Connexion. Temper. Action.

Their ſtrainer.

Beſides you muſt note that in each Kidney there is a cavity bounded by a certain membrane, incompaſſed by the diviſion of the Emulgent veins and arteries, through which the urine is ſtrained partly by the expulſive faculty of the Kidneys, partly by the attractive of the ureters, which run through the ſubſtance of the Kidneys on the hollow ſide, no otherwiſe than the *Porus cholagogus* through the body of the Liver.

## CHAP. XXVII.

### *Of the ſpermatick Veſſels.*

NOw we ſhould have ſpoken of the ureters, becauſe as we ſaid before, they are paſſages derived from the Kidneys to carry the urine to the bladder. But becauſe they cannot be diſtinguiſhed and ſhewed unleſſe by the corrupting and vitiating the ſite of the ſpermatick veſſels; therefore I have thought it better to paſs to the explication of all the ſpermatick parts.

And firſt of all you muſt gently ſeparate them, (that ſo the declaration of them may be more eaſie and manifeſt) and that from the coat which comes from the *peritonæum*, and the fat which inveſts them even to the ſhare-bone, having diligently conſidered their ſite before you ſeparate them. Then you ſhall teach that the ſubſtance of theſe veſſels, is like to that of the veins and arteries. Their quantity is ſmall in thicknes, but of an indifferent length by reaſon of the diſtance of their originall from the Teſticles. They are longer in men than in women, becauſe theſe have their Teſticles hanging without their belly, but women have them lying hid within their belly. Their figure and compoſure is wholly like the figure and compoſition of the veines and arteries, except in this one thing, that from that place where they goe forth of the great capacity of the *Peritonæum*, they are turned into many intricate windings, like crooked ſwoln veins, even to the Teſticles. That the ſpermatick matter in that one tract, which yet is no other than blood, may be prepared to concoction, or rather be turned into ſeed in theſe veſſels, by the irradiation of the faculty of the Teſticies. Theſe veſſels are ſix in number, foure preparing, and two ejaculatory, of which we will ſpeak hereafter. Therefore on each ſide there be two preparing veſſels, that is, a vein and an artery, ariſing as we told you when we ſpoke of the diſtribution of the hallow vein. They are inſerted into the Teſticles through that coate which ſome call *Epididymis*, others *Darton*. Their ſite is oblique above the loins & flanks, whileſt they run downe between the ends of the ſhare and haunch bone, they are knit to the parts lying under them, both by certaine fibers which they ſend from them, as alſo by the membrane they have from the *Peritonæum*. They have like temperature as the veines and Arteries have. Their action is to carry blood to the Teſticles, for generating of ſeed.

Their ſubſtance. Quantity. Figure and compoſure. Number. Site.

## CHAP. XXVIII.

### *Of the Teſticles, or Stones.*

THe Teſticles are of a Glandulous, white, ſoft and looſe ſubſtance, that ſo they may the more eaſily receive the ſpermatick matter: their magnitude and figure equall, and reſemble a ſmall pullets Egge ſomewhat flatted; their compoſure is of veins, arteries, coats and their proper fleſh. Their veins and arteries proceed from the ſpermatick veſſels, their nerves from the ſixt conjugation, by the roots of the ribs and out of the holy bone. They are wrapped in foure coats, two whereof are common, and two proper. The common are the *Scrotum* or skin of the Cods, proceeding from the true skin; and the fleſhy coat, which conſiſts of the fleſhy Pannicle in that place receiving a great number of veſſels, through which occaſion it is ſo called. The proper coats are firſt the *Erythroris* ariſing from the proceſs of the *Peritonæum*, going into the *Scrotum* together

Their ſubſtance. Magnitude and figure. Compoſition. The coat *Erythroris*.

gether with the ſpermatick veſſels which it involves and covers; this appears red both by reaſon of the veſſels as alſo of the Cremaſter muſcles of the Teſticles; Then the *Epididymis* or *Dartos* which takes its originall of the membrane of the ſpermatick preparing veſſels. The fleſh of the Teſticles is as it were a certaine effuſion of matter about the veſſels, as we ſaid of other entrails. But you muſt obſerve that the *Erythrois* encompaſſes the whole ſtone, except its head, in which place it ſticks to the *Epididymis*, which is continued through the whole ſubſtance of the Teſticle. This *Epididymis* or *Dartos* was therefore put about the ſtones, becauſe the Teſticles of themſelves, are looſe, ſpongious, cavernous and ſoft, ſo that they cannot ſafely be joined to the ſpermatick veſſels, which are hard and ſtrong. Wherefore Nature that it might join extreams by a fit *Medium* or mean, formed this coat *Epididymis*. This is ſcarce apparent in women by reaſon of its ſmalneſſe. The two forementioned common coats, adhere or ſtick together by their veſſels not only amongſt themſelves, but alſo with the *Erythrois*. You muſt beſides obſerve the Cremaſter muſcles are of the ſaid ſubſtance with other muſcles, ſmall and thin, of an oblique and broad figure, ariſing from the membrane of the *Peritonæum*, which (as we ſaid before) aſſumes fleſh from the flanks. Their compoſition is like that of other muſcles. They are two, on each ſide one. They are ſituate from the ends of the flanks, even to the ſtones. They have connexion with the proceſs of the *Peritonæum* and Teſticles. Their temper is like that of other muſcles. Their action is to hang and draw up the Teſticles towards the belly, whence they are called hanging muſcles. The Teſticles are moſt commonly two in number; on each ſide one; ſometimes there be three, ſometimes one alone, as it happens alſo in the Kidnies; for ſome have but one Kidney. They lie hid in the *Scrotum* at the very roots of the ſhare-bone, connexed to the principall parts of their veſſels, with the neck of the bladder and yard; but by their coats they adhere to the parts from whence they have them. They are of a cold and moiſt temper, becauſe they are glandulous; although they may be hot by accident, by reaſon of the multitude of the veſſels flowing thither. Thoſe whoſe teſticles are more hot are prompt to venery, and have their privities and the adjacent parts very hairy, and beſides their teſticles are very large and compact. Thoſe on the contrary that have them cold are ſlow to venery, neither do they beget many children, and thoſe they get are rather female than male, their privities have little hair upon them, and their teſticles are ſmall, ſoft and flat.

The *Epididymis*, or *Dartos*.

The Cremaſter muſcles.

Temper.

The action of the teſticles is to generate ſeed, to corroborate all the parts of the body, and by a certain manly irradiation to breed or encreaſe a true maſculine courage. This you may know by Eunuchs or ſuch as are Gelt, who are of a womaniſh nature, and are oftentimes more tender and weak than women. As *Hippocrates* teaches, by example of the *Scythians*, *lib. de Aere, locis & aquis.*

Action.

## CHAP. XXIX.

### *Of the varicous bodies* or Paraſtat's, *and of the ejaculatory veſſels, and the glandulous* or Proſtates.

THe varicous *Paraſtatæ* are nervous and white bodies, like as the nerves wound and cloſe woven amongſt themſelves, they are ſtretched even from the top to the bottom of the teſticles, from whence preſently by their departure they produce the *Vaſa ejaculatoria*, or leading veſſels. But unleſs we doe very well diſtinguiſh their names, they ſhall ſcarce ſhun confuſion. For that which I call *Paraſtatæ*; that is, as it were the head of the teſticle, being as it were like another ſtone, is called *Epididymis* by *Galen. lib.* 1. *de ſemine*. But I by the example and authority of many Anatomiſts, underſtand by the *Epididymis* the proper coat of the teſticles, of which thing I thought good by the way to admoniſh you of. Their Action is by their crooked paſſages to hinder the ſeed from departing out of the preparing into the leading veſſels before it ſhall bee moſt perfectly laboured and concocted in theſe veſſels by the power and force of the teſticles. For in the firſt windings, the blood lookes pure; but in the laſt it is not ſo red, but ſomewhat whitiſh For Nature commonly doth thus delay the matter in its paſſage either by ſtraitneſs, or obliquity, which it deſires to make more perfect and elaborate by any new concoction; this we may learn by the foldings of the *Rete mirabile*, the windings of the Guts, the wrinkles in the bottome of the ſtomach, the ſtraitneſſe of the *Pylorus*, the capillary veins diſperſed through the body of the Liver; certainly nature hath intended ſome ſuch thing in the making of the ſpermatick veſſels. Their quantity is viſible, and figure round, tending ſomewhat to ſharpneſſe. They are compoſed of veins, nerves, and arteries, which they enjoy from the veſſels of the teſticles, from the *Epididymis*, or the coat, from the *Peritonæum* and their proper ſubſtance. Their temper is cold and dry. They bee two in number, one to each teſticle. But theſe varicous bodies are called *Paraſtatæ*, Aſſiſters, becauſe they ſuperficially aſſiſt, and are knit to the teſticles according to their length, or long wayes. Out of the *Paraſtatæ* proceed the *Vaſa ejaculatoria*, or leading veſſels, being of the ſame ſubſtance as their Progenitors; that is, ſolid, white and as it were nervous. Their quantity is indifferent, their figure round, and hollow, that the ſeed may have a free paſſage through them, yet they ſeem not to bee perforated by any manifeſt paſſage, unleſs

Their ſubſtance.

Here the author ſpeaks otherwiſe then *Galen*.

Action.

Their quantity figure, and compoſure.

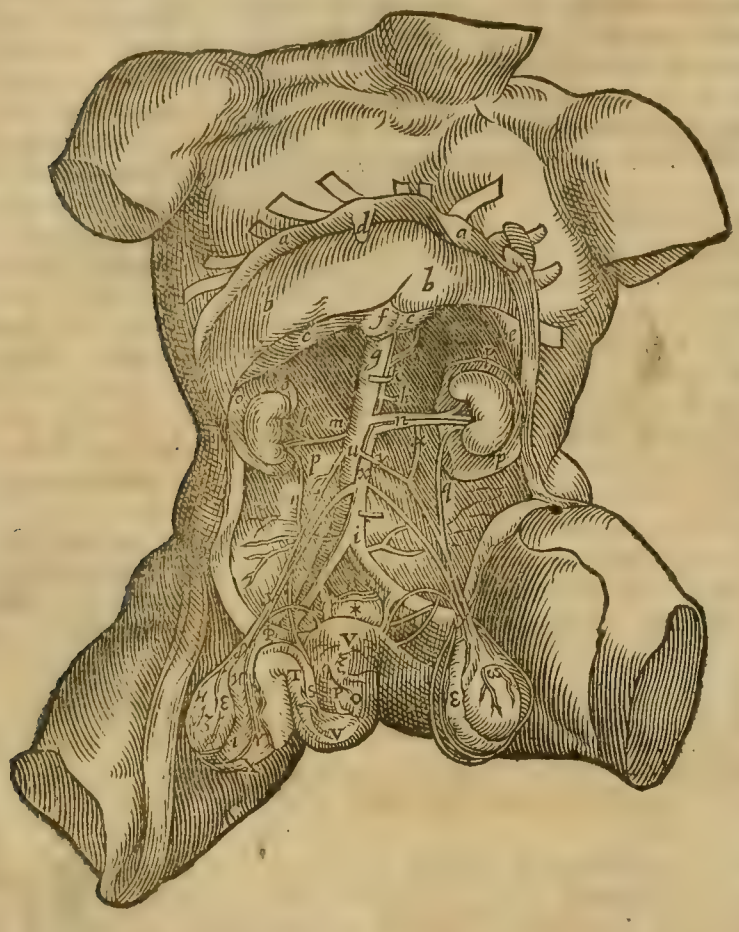
Their temper and number.

*Vaſa ejaculatoria*, the ejaculatory or leading veſſels.

unleſs by chance in ſuch as have had a long *Gonorrhœa*. They have like temper as the *Paraſtates*, between which and the *Proſtates* they are ſeated, immediately knit with them both; as both in the coat and the other veſſels with the parts from whence they take them.

But we muſt note, that ſuch like veſſels coming out of the *paraſtates* aſcend from the bottom of the ſtones even to the top, in which place meeting with the preparing veſſels, they riſe into the belly by the ſame paſſages, and bind themſelves together by nervous fibers, even to the inner capacity of the belly; from whence turning back, they forſake the preparing, that ſo they may run to the bottom of the ſhare-bone, into the midſt of two glandulous bodies which they call *proſtates* ſituate at the neck of the bladder, that there meeting together they may grow into one paſſage.

*The tenth figure, wherein thoſe things ſhewed in the former figure, are more exactly ſet forth.*



*aa*, A part of the Midriffe and of the *Peritonæum* with the ribs broken. *bb*, *cc*. The Convex or gibbous part of the Liver marked with *bb*. the hollow or concavous part with *cc*. *d e*, The right and left ligaments of the Liver. *f*, The trunk of the gate vein. *g*, The trunk of the hollow vein. *h*, *l*, The fatty veins both left and right. *i*, The aſcent of the great artery of above the hollow vein, and the diviſion thereof. *k*, The *Cæliacall* artery. *m*, *n*, The emulgent veſſels. *oo*, *pp*, The fat tunicles or coats torn from both the kidneys. *qq*, The ureters that go unto the bladder. *t*, *u*, The right ſpermaticall vein which ariſeth near to *u*. *x*, *y*, The double originall of the left ſpermaticall vein. *x*. from the emulgent. *y*, from the hollow vein. *α*, The originall of the ſpermaticall arteries. *β*, Certain branches from the ſpermatick arteries which run unto the *Peritonæum*. *γ*, The paſſage of the ſpermaticall veſſels through the productions of the *Peritonæum*, which muſt be obſerved by ſuch as uſe to cut for the Rupture. *δ*, The ſpiry bodden bodies entrance into the teſticle, it is called *Corpus varicoſum pyramidale*. *ε*, The *Paraſtatæ*. *ζ*, The ſtone or teſticle covered with his inmoſt coat. *η*, The deſcent of the leading veſſell called *Vas deferens*. *V y*, The Bladder. * The right gut. *ξ*, The glandules called *proſtatæ* into which the leading veſſels are inſerted. *ρ*, The muſcle of the bladder. *στυ*, Two bodies of the yard, *σ*, and *τ*, and *υ*, his veſſels. *φχ*, The coat of the Teſticle. *ψω*, The muſcle of the Teſticle *ψ*, hit veſſels *ω*.

For thus of three paſſages, that is, of the 2 leading veſſels, and 1 paſſage of the bladder, there is one common, one in men for the caſting forth of ſeed and urine. A Caruncle riſing like a creſt at the beginning of the neck of the bladder argues this uniting of the paſſages, which receiving this ſame paſſage which is ſufficiently large, is oft-times taken by ſuch as are ignorant in Anatomy for an unnaturall Caruncle, then eſpecially when it is ſwoln through any occaſion. Theſe leading veſſels are two in number, on each ſide one. Their action is to convey the ſeed made by the teſticles to the Proſtats, & ſo to the neck of the bladder, ſo to be caſt forth at the common paſſage. But if any ask whether that common paſſage made by the two leading veſſels between the two glandulous bodies be obvious to ſenſe or no: We anſwer, it is not manifeſt, though reaſon compell us to confeſs that that way is perforated by reaſon of the ſpermatick, groſs and viſcous matter carryed that way. But peradventure the reaſon why that paſſage cannot be ſeen is, becauſe in a dead carcaſs all ſmall paſſages are cloſed and hid, the heat and ſpirits being gone, and the great appear much leſs,

Their number and action.

by

by reaſon all the perforations fade, and fall into themſelves. Yet certainly theſe paſſages muſt needs be very ſtrait, even in a living man, ſeeing that in a dead they will not admit the moint of a needle. Wherefore we need not fear, leſt in ſearching, whilſt we thruſt the *Catheter* into the bladder, it penetrate into the common paſſage of the leading veſſels which runs within the Caruncle, unleſs peradventure by ſome chance, as a *Gonorrhœa*, or ſome great *Phlegmon*, it be much dilated beſides nature. For I have ſometimes ſeen ſuch paſſages ſo open, that they would receive the head of a Spathern; which thing ſhould admoniſh us, that in ſearching we take great care, that we do not raſhly hurt this Caruncle, for being ſomewhat raſhly handled with a *Catheter* it caſts forth blood, eſpecially if it be inflamed. But alſo the concourſe of the ſpirits flowing with great violence together with the ſeed, much helps forward ſuch ejaculation thereof performed through theſe ſtrait paſſages by the power of the imaginative faculty in the Act of generation.

This Caruncle muſt be obſerved and diſtinguiſhed from a *Hyperſarcoſis* or fleſhy excreſcence.

After the leading veſſels follow the *Proſtatæ*, being glandulous bodies of the ſame ſubſtance and temper that other Glandules are. Their quantity is large enough, their figure round, & ſomewhat long, ſending forth on each ſide a ſoft production of an indifferent length. They are compoſed of veins, nerves, arteries, a coat (which they have from the neighbouring parts) and laſtly their proper fleſh, which they have from their firſt conformation. They are two in number, ſituate at the root of the neck of the bladder, ſomewhat ſtraitly bound or tyed to the ſame, to the leading veſſels, and the parts annexed to them. But alwayes obſerve, that every part which enjoyes nouriſhment, life and ſenſe, either firſt or laſt hath connexion with the principall parts of the body, by the intercourſe of the veſſels which they receive from thence.

The *Proſtatæ*. Their quantity and figure.

Number and ſite.

*An anatomicall axiome.*

The uſe of the Proſtates is, to receive in their proper body the ſeed laboured in the teſticles, and to contain it there, untill it be troubleſome either in quantity or quality, or both. Beſides they contain a certain oily and viſcid humor in their glandulous body, that continually diſtilling into the paſſage of the urine, it may preſerve it from the acrimony & ſharpneſs thereof. But we have obſerved alſo on each ſide other Glandules, which *Rondeletius* calls *Appendices glandulosæ*, Glandulous dependences to ariſe from theſe proſtates, in which alſo there is ſeed reſerved.

Their uſe.

*Rond in method. med. ad morbos.*

## CHAP. XXX.

### *Of the Vreters.*

NOw it ſeems fit to ſpeak of the *Vreters*, bladder and parts belonging to the bladder. Therefore the Ureters are of a ſpermatick, white, denſe and ſolid ſubſtance, of an indifferent bignes in length and thicknes. Their figure is round and hollow. They are compoſed of two coats, one proper, conſiſting of right and tranſverſe fibers, which comes from the emulgent veins and arteries; the other common, from the *Peritonæum*; beſides they have veins, nerves and arteries from the neighbouring parts.

The ſubſtance, magnitude, figure and compoſure of the Ureters.

They be two in number, on each ſide one; they are ſituate between the Kidneys (out of whoſe hollow part they proceed) and the bladder. But the manner how the Ureters inſert or enter themſelves into the bladder, and the *Porus Cholagogus* into the *Duodenum*, exceeds admiration; for the ureters are not directly but obliquely implanted neer the orifice of the bladder, and penetrate into the inner ſpace thereof; for within they doe as it were divide the membrane or membranous coat of the body of the bladder, and inſinuate themſelves into that, as though it were double. But this is opened at the entrance of the urine, but ſhut at other times, the cover as it were falling upon it, ſo that the humor which is faln into the capacity of the bladder cannot be forced or driven back, no not ſo much as the aire blown into it can come this way out, as we ſee in ſwines bladders blown up and filled with aire.

Number and ſite.

For we ſee it is the Aire contained in theſe which fills them thus, neither can it be preſſed forth but with extraordinary force.

For as this skin or coat turned in by the force of the humor gives way, ſo it being preſſed out by the body contained within, thruſts its whole body into the paſſage as a ſtopple; like to this is the inſertion of the *Porus Cholagogus* into the Guts.

The ureters have connexion with the above mentioned parts, with the muſcles of the loins; upon which they run from the Kidneys to the bladder.

Connexion.

Wherefore nothing hinders, but that the ſtone ſliding through the ureters into the bladder, may ſtupefie the thigh as much as it did when it was in the Kidney. They are of a cold and dry temper.

Their uſe is, to ſerve as paſſages, or channels for carrying the urine into the bladder.

Temper and uſe.

## CHAP. XXXI.

### *Of the Bladder.*

THe bladder is of the ſame ſubſtance that the ureters, that is, nervous, that ſo it may be the more eaſily dilated.

The ſubſtance.

It is of a large proportion, in ſome bigger, in ſome leſſe, according to the difference of age, and habit of body. It is of a round figure and as it were Pyramidall.

Figure.

It

Compoſition. It is compoſed of the two coats, one proper, which is very thick and ſtrong, compoſed of the three ſorts of fibers, that is, in the inner ſide of the direct; without of the tranſverſe; and in the midſt of the oblique. The other common Coat coming from the *Peritonæum* hath veins and arteries on each ſide one, from the *Hypogaſtrick* veſſels above the holy-bone, alſo it hath nerves on each ſide from the ſixt conjugation mixt with the nerves of the holy-bone.

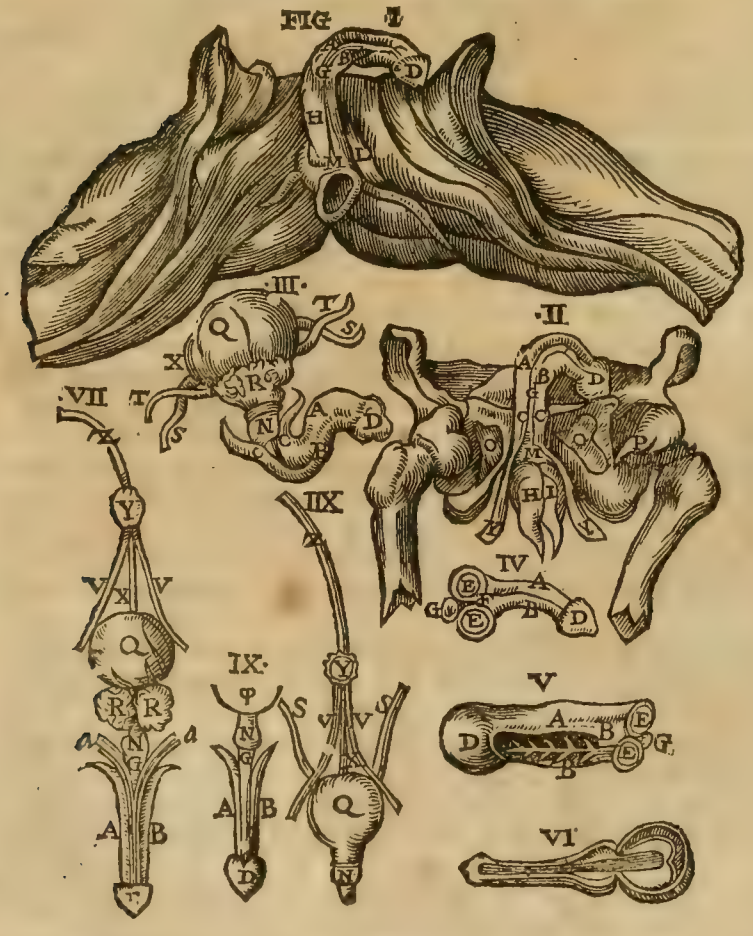
For theſe nerves deſcend from the brain even to the end of the holy-bone.

It is but one and that ſituate in men in the lower belly upon the right gut and below the ſhare-bone, but in women between the womb and that bone, to which it cleaves with its membranous ligaments, as it doth to the yard by its neck, and to the right gut by its common coat and proper veſſels. It is of a cold and dry temper.

Temper, uſe or action. The uſe and action thereof is by the fibers continually to draw the urine, and contain it as long as need requires, and then to expell it by the neck, partly by compreſſion either of it ſelf, or rather to the muſcles of the *Epigaſtrium* and midriffe, becauſe this motion, ſeeing it is voluntary cannot be performed unleſs by a muſcle which the bladder wants; partly by the dilatation and relaxation of the Sphincter muſcle compoſed of tranſverſe fibers, like the ſphincter of the fundament, after the ſame manner to ſhut up the orifice of the bladder, that the urine flow not out againſt our will. But the bladder as it fils is dilated, but as it is emptyed, it is contracted like a purſe. You may eaſily obſerve this Muſcle in a Sows bladder, it is ſtretched from the orifice of the bladder and beginning of the urinary paſſage even to the privities even in women; but in man it is terminated in the *Peritonæum* as ſoon as it hath left the right Gut. Beſides, this muſcle is thus far ſtretched forth, that the urine by its compreſſion ſhould be wholly preſſed out of the bladder, which by too long ſtay would by its acrimony do ſome harm. This is the common opinion of Anatomiſts concerning the Sphincter of the bladder, which nevertheleſs *Fallopius* allows not of. For (ſaith he) if this muſcle ſhould be ſituate beneath the glandulous bodies, the ſeed in copulation could never be caſt forth without ſome ſmall quantity of urine. Wherefore he thinks that this muſcle is ſituate above the *Proſtats*, and that it is nothing elſe but the beginning of the neck of the bladder, which becomes more fleſhy whilſt it is woven with tranſverſe fibers.

Their Sphincter of the bladder.

*The eleventh figure of the Bladder and Yard.*




AB, 1, 2, 3, 4, 5, 7, 9, the two bodies which make the yard.

CC, 2, 3, the place where theſe two bodies do firſt ariſe.

D, 1, 2, 3, 4, 5, 7, 9, the nut of the yard called *glans penis*.

EE, 4, 5, the fungous and red ſubſtance of the bodies of the yard.

F, 4, 5, the mutuall connexion of the bodies of the yard, and the nervous outward ſubſtance of the ſame, compaſſing round about the former fungous ſubſtance.

G, 1, 2, 3, 4, 5, 7, 9, the paſſage of the Urine, or common pipe running under the yard all along his length.

H, I, 1, 2, the firſt pair of Muſcles of the yard, which in the firſt figure do yet grow to it, but in the ſecond they hang from their originall.

K, L, 1, 2, the ſecond pair of Muſcles of the yard, in the firſt figure growing, in the ſecond hanging from their inſertion. M, 1, 2, the Sphincter of the right gut. N, 3, 7, 8, 9, the round ſphincter Muſcle of the bladder. OO, a Membrane which is over the holes of the ſhare-bone. P, 2, a round Ligament from the meeting of the ſhare-bones on the head of the thigh. Q, 3, 7, 8. the body of the bladder. RR, 3, 7, the *Proſtatæ*, which into ſeed when it is perfectly laboured, is led. SS, 3, 8, Portions of the ureters. TT*3, Portions of the veſſels, which lead down the ſeed. VV, 7, 8, the umbilicall arteries. X, 7, 8, the ligament of the bladder cald *Urachus*. Y, 7, 8 the navil or *umbilicus*. Z, 7, 8, the umbilicall vein. *aa*, 7, the vein and artery of the yard. *b*, 5. the artery diſtributed through the body of the yard.

For

For the neck of the bladder it differs nothing in ſubſtance, compoſure, number, and temper from the bladder, but only in quantity, which is neither ſo large, nor round in figure, but ſomewhat long together with the yard repreſenting the ſhape of the letter S. It is placed in men at the end of the right Gut and *Perinæum*, riſing upwards even to the roots of the yard, and with it bending it ſelf downwards; in women it is ſhort, broad, and ſtreight, ending at the orifice of the neck of the womb between the nervous bodies of the *Nymphæ*. The neck of the bladder.

In men it hath connexion with the bladder, the ejaculatory veſſels, the right gut and yard, but in women only with the neck of the wombe and privities. The uſe of it is in men to caſt forth ſeed and urine, in women only urine. But we muſt note that the ſhare bones muſt be divided and pulled aſunder, in that part where they are joyned, that ſo you may the more exactly obſerve the ſituation of theſe parts. Beſides you muſt note that by the *Perinæum* we underſtand nothing elſe, in men and women, then that ſpace which is from the fundament to the privities, in which the ſeam is called *Taurus*. The connexion and uſe thereof.

## CHAP. XXXII.

### *Of the Yard.*

NOw follows the declaration of the Privy parts of men and women, and firſt we will treat of mens. The yard is of a ligamentous ſubſtance, becauſe it hath its originall from bones, it is of an indifferent magnitude in all dimenſions, yet in ſome bigger, in ſome leſs; the figure of it is round, but yet ſomewhat flatted above and beneath. The ſubſtance, quantity and figure of the yard.

It is compoſed of a double coat, nerves, veins, arteries, two ligaments, the paſſage of the urine, and four muſcles. It hath its coats both from the true skin, as alſo from the fleſhy pannicle, but the veins and Arteries from theſe of the lower part of the lower belly which run on the lower part of the Holy-bone into the yard, as the ſeminary veſſels run on the upper part. Compoſure.

The ligaments of the yard proceed on both ſides from the ſides and lower commiſſure of the ſhare-bones; wherefore the yard is immediately at his root furniſhed with a double ligament, but theſe two preſently run into one ſpungy one. The paſſage of the urine ſituate in the lower part of the yard comes from the neck of the bladder between the two ligaments. The ligaments.

For the four muſcles, the two ſide ones compoſing or making a great part of the yard, proceed from the inward extuberancy of the Hip-bone, and preſently they are dilated from their originall; and then grow leſs again. The two other lower ariſe from the muſcles of the fundament and accompany the urinary paſſage the length of the *perinæum* untill they enter the yard; but theſe two muſcles cleave ſo cloſe together, that they may ſeem one having a triangular form. The muſcles.

The action of theſe four muſcles in the act of generation is, they open and dilate this common paſſage of urine and ſeed, that the ſeed may be forcibly or violently caſt into the field of nature; and beſides they then keep the yard ſo ſtiffe, that it cannot bend to either ſide. Their Action.

The yard is in number one, and ſituate upon the lower parts of the ſhare-bone, that it might be more ſtiffe in erection. It hath connexion with the ſhare-bone and neighbouring parts; by the particles of which it is compoſed. It is of a cold and dry temper. The action of it is to caſt the ſeed into the womb, for preſervation of mankind.

The head of it begins where the tendons end, this head from the figure thereof is called *Glans* and *Balanus*; that is, the Nut, and the skin which covers that head is called *Præputium*, that is, the foreskin. The fleſh of this *Glandule* is of a middle nature between the glandulous fleſh and true skin. But you muſt note that the Ligaments of the yard are ſpongy contrary to the condition of others, and filled with groſs and black blood. But all theſe ſtirred up by the delight of deſired pleaſure, and provoked with a venereall fire, ſwell up and erect the yard. The Nut. The *Præputium*, or foreskin.

## CHAP. XXXIII.

### *Of the ſpermatick veſſels and teſticles in women.*

NOw we ſhould treat of the Privy parts in women, but becauſe they depend upon the neck and proper body of the womb, we will firſt ſpeak of the womb, having firſt declared what difference there is between the ſpermatick veſſels and teſticles of men and women. Wherefore we muſt know that the ſpermatick veſſels in women do nothing differ from thoſe in men in ſubſtance, figure, compoſure, number, connexion, temper, originall and uſe; but only in magnitude and diſtribution, for women have them more large and ſhort. In what the ſpermatick veſſels in women differ from thoſe in men.

*The twelfth Figure, of the Womb.*

A. The bottome of the womb laid open without any membrane.

BB. the neck of the womb turned upward.

CD. a part of the bottom of the womb like the nut of the yard, ſwelling into the upper part of the neck of the womb, in the middle whereof the orifice appeareth.

EE. a membrane knitting the womb to the *Peritonæum*, & holding together the veſſels thereof.

F. the left teſticle.

G. the ſpermaticall vein and artery.

H. a part of the ſpermaticall veſſels reaching unto the bottom of the womb.

I. one part of the veſſels coming to the teſticles * a veſſell leading the ſeed unto the womb.

K. the coat of the teſticle with the implication of the veſſels. L. the cavity of the bladder opened. M. the inſertion of the Ureters into the bladder. N. the Ureters cut from the kidnies. O. the inſertion of the neck of the bladder into the lap or privity.

*The ſecond Figure.*

*aa.* The ſpermaticall vein and artery. *bb.* branches diſtributed to the *Peritonæum* from the ſpermatical veſſels. *c.* the bottom of the womb. *d.* the neck of the womb. *e.* certain veſſels running through the inſide of the womb, and the neck thereof. *ff.* veſſels reaching to the bottom of the womb produced from the ſpermaticall veſſel. *gg.* the leading veſſell of the ſeed called *Tuba*, the Trumpet. *hh.* a branch of the ſpermaticall veſſel compaſſing the Trumpet. *ii.* the teſticles. *kk.* the lower liganents of the womb, which ſome cal the Cremaſters or hanging muſcles of the womb. *l.* the lap or privity into which the Cremaſters do end. *m.* a portion of the neck of the bladder.

*The third Figure.*

*aa.* The ſpermaticall veſſels. *bb.* a branch from theſe ſpermaticall veſſels to the bottom of the womb. *cc.* the body or bottom of the womb. *d.* the neck of the ſame. *e.* the neck of the bladder ending into the neck of the womb. *ff.* the teſticles. *gg.* the leading veſſels, commonly though not ſo well called the ejaculatory veſſels. *hh.* the diviſion of theſe veſſels, one of them determining into the horns at double *kk.* *ii.* the other branch ending in the neck, by which women with child avoid their ſeed. *kk.* the horns of the womb.

*The fourth Figure.*

AB. The boſome of the bottom of the womb, at whoſe ſides are the horns. CD. a line like a ſuture or ſeam, a little diſtinguiſhing that boſome. EE. the ſubſtance of the bottom of the womb, or the thickneſs of his inner coat. F. a protuberation or ſwelling of the womb in the middle of the boſom. G. the orifice of the bottom of the womb. HH. the coat or ſecond cover of the bottom of the womb, coming from the *Peritonæum*. IIII. a portion of the membranes which tie the womb. KK. the beginning of the neck of the womb. L. the neck of the bladder inſerted into the neck of the womb. *m.* the *Clitoris* in the top of the privity. *n.* the inequality of the privity where the *hymen* is placed. *o.* the hole or paſſage of the privity in the cleft. *p.* the skinny caruncle of the privity.

Why womans ſpermatick veſſels they are larger, but ſhorter then mens.

It was fit they ſhould be more large, becauſe they ſhould not only convey the matter fit for generation of young and nouriſhment of the teſticles, but alſo ſufficient for the nouriſhment of the womb and child; but ſhorter, becauſe they end at the teſticles and womb within the belly in women. Where you muſt note that the preparing ſpermatick veſſels,

ſels, little before they come to the Teſticles are divided into two unequall branches, of which the leſſer bended, after the ſame manner as we ſaid in men, goes into the head of the teſticle, through which it ſends a ſlender branch into the coats of the teſticles for life and nouriſhment, and not only into the coats but alſo into leading veſſels. But the bigger branch deſcends on each ſide by the upper part of the wombe between the proper coat and the common, from the *Peritonæum* where it is divided into divers branches. By this difference of the ſpermatick veſſels you may eaſily underſtand why women caſt forth leſs ſeed than men.

In what their teſticles differ from mens.

For their Teſticles, they differ little from mens but in quantity; For they are leſſer and in figure more hollow and flat, by reaſon of their defective heat which could not elevate or lift them up to their juſt magnitude. Their compoſure is more ſimple; for they want the *ſcrotum* or cod, the fleſhy coat, and alſo according to the opinion of ſome the *Erythroides*, but in place thereof they have another from the *Peritonæum* which covers the proper coat, that is, the *Epididymis*, or *Dartos*. *Silvius* writes that womens Teſticles wants the *Erythroides*; yet it is certain that beſides their peculiar coat *Dartos*, they have another from the *peritonæum*, which is the *Erythroides*, or as *Fallopius* cals it the *Elythroides*, that is as much as the *vaginalis* or ſheath. But I think that this hath ſprung from the miſ-underſtanding that place in *Galen* where he writes, that womens teſticles want the *Epididymis*. For we muſt not underſtand that to be ſpoken of the coat, but of the varicous paraſtats (as I formerly ſaid). They differ nothing in number, but in ſite; for in men they hang without the belly at the ſhare bone above the *Peritonæum*; women have them lying hid in their belly, neer the bottome at the ſides of the wombe, but yet ſo as they touch not the body of the wombe.

*Lib. 14. de uſu part.*

Site.

But theſe teſticles are tyed to the womb both by a coat from the *Peritonæum*, as alſo by the leading veſſels deſcending to the horns of the wombe, but to the reſt of the body by the veſſels and the nerves ariſing from the holy bone and Coſtall nerves. They are of a colder Temper than mans. The ejaculatory, or leading veſſels in women differ thus from mens, they are large at the beginning, and of a veiny conſiſtence, or ſubſtance, ſo that you can ſcarce diſcern them from the coat *Peritonæum*, then preſently they become nervous, and waxe ſo ſlender, that they may ſeem broken or torn, though it be not ſo; but when they come nearer to the horns of the wombe, they are again dilated; in their other conditions, they agree with mens, but that they are altogether more ſlender and ſhort. They have a round figure, but more intricate windings than mens; I beleeve, that theſe windings might ſupply the defect of the varicous Paraſtats. They are ſeated between the teſticles and wombe, for they proceed out of the head of the teſticle, then preſently armed with a coat from the *Peritonæum*, they are implanted into the wombe by its horns.

Connexion.

Temper.

Their ejaculatory veſſels.

Why they have more intricate windings.

Their ſite.

## CHAP. XXXIIII.

### *Of the Wombe.*

THe Wombe is a part proper only to women, given by nature in ſtead of the *Scrotum*, as the neck thereof, and the annexed parts in ſtead of the yard; ſo that if any more exactly conſider the parts of generation in women and men, he ſhall find that they differ not much in number, but only in ſituation and uſe. For that which man hath apparent without, that women have hid within, both by the ſingular providence of nature, as alſo by the defect of heat in women, which could not drive and thruſt forth thoſe parts, as in men. The womb is of a nervous and membranous ſubſtance, that it may be more eaſily dilated and contracted, as need ſhall require.

Where in the privy parts in women differ from thoſe in men.

The magnitude thereof is divers, according to the diverſity of age, the uſe of venery, the flowing of their courſes, and the time of conception. The wombe is but ſmall in one of unripe age, having not uſed venery, nor which is menſtrous; therefore the quantity cannot be rightly defined.

The ſubſtance and magnitude of the wombe.

The figure of the wombe is abſolutely like that of the bladder, if you conſider it without the productions, which *Herophilus* called horns, by reaſon of the ſimilitude they have with the horns of Oxen at their firſt coming forth. It conſiſts of ſimple and compound parts. The ſimple are the veins, arteries, nerves, and coats. The veins and arteries are four in number, two from the preparing ſpermatick veſſels, the two other aſcend thither from the *Hypogaſtrick*, after this manner.

Figure.

The horns of the wombe.

Compoſure.

The veins and Arteries.

Firſt, theſe veſſels before they aſcend on each ſide to the wombe, divide themſelves into two branches, from which otherſome go to the lower part of the wombe, otherſome to the neck thereof, by which the menſtruous blood, if it abound from the conception, may be purged.

Nerves come on both ſides to the wombe, both from the ſixt conjugation, deſcending by the length of the back bone, as alſo from the holy bone, which preſently united and joyned together, aſcend and are diſtributed through the wombe, like the veins and arteries.

Nerves.

The utmoſt or common coat of the wombe, proceeds from the *Peritonæum*, on that

The Coats.

part it touches the holy bone; but the proper it hath from the first conformation, which is composed of the three sorts of fibers, of the right on the inside of the attraction of both seeds; the transverse without to expell, if occasion be; the oblique in the midst for the due retention thereof.

No cels in the wombe.

The wombe admits no division, unless into the right and left side, by an obscure line or seam, such as we see in the *scrotum*, but scarce so manifest; neither must we after the manner of the ancients, imagine any other cels in the wombe. For by the law of nature, a woman at one birth can have no more than two. An argument hereof is, they have no more than two dugs. If any chance to bring forth more, it is besides nature, and somewhat monstrous, because nature hath made no provision of nourishment for them.

The site.

Nature hath placed the wombe at the bottome of the belly, because that place seems most fit to receive seed, to carry and bring forth the young. It is placed between the bladder and right gut, and is bound to these parts much more straitly by the neck, than by the body thereof; but also besides it is tyed with two most strong ligaments on the sides, and upper parts of the sharebone, on which it seems to hang; but by its common coat from the *Peritonæum*, chiefly thick in that place, it is tied to the hollow bone, and the bones of the hanch and loins.

The temper and action.

By reason of this strait connexion, a woman with child feeling the painfull drawings back, and as it were convulsions of those ligaments, knows her self with child. It is of a cold and moist temper, rather by accident, than of it self. The action thereof is to contain both the seeds, and to cherish, preserve, and nourish it, so contained, untill the time appointed by nature; and also besides, to receive, and evacuate the menstruous blood. The compound parts of the wombe are, the proper body and neck thereof. That body is extended in women big with child, even to the navell, in some higher, in some lower.

The *Coyledones*.

In the inner side the *Cotyledones* come into our consideration, which are nothing else than the orifices and mouths of the veins, ending in that place. They scarce appear in women, unless presently after child-bearing, or their menstruall purgation; but they are apparent in sheep, Goats, and Kine, at all times like wheat corns, unless when they are with young, for then they are of the bigness of hasell nuts: but then also they swell up in women, and are like a rude peece of flesh of a finger and a half thick; which begirt all the naturall parts of the infant shut up in the wombe; out of which respect this shapeles flesh, according to the opinion of some, is reckoned amongst the number of coats investing the infant, and called *Chorion*, because, as in beasts, the *Chorion* is interwoven with veins, and arteries, whence the umbilicall vessels proceed; so in women this fleshy lump is woven with veins, and arteries, whence such vessels have their originall. Which thing, how true and agreeable to reason it is, let other men judg.

*Columbus* justly reproved.

There is one thing whereof I would admonish thee, that as the growth of the *Cotyledones* in beasts are not called by the name of *Chorion*, but are only said to be the dependents thereof, so in women such swollen *Cotyledones* merit not the name of *Chorion*; but rather of the dependences thereof.

The orifice of the wombe.

This body ends in a certain straitness which is met withall, in following it towards the privities, in women which have borne no children, or have remained barren some certain time; for in such as are lately delivered, you can see nothing but a cavity and no straitness at all. This straitness we call the proper orifice of the wombe, which is most exactly shut after conception, especially untill the membrane, or coats incompassing the child be furnished, and strong enough to contain the seed, that it flow not forth, nor be corrupted by entrance of the air; for it is opened to send forth the seed, and in some the courses and serous humors, which are heaped up in the wombe in the time of their being with child.

The proper orifice of the wombe is not alwayes exactly shut in women with child.

The neck of the wombe.

From this orifice the neck of the wombe taking its originall, is extended even to the privities. It is of a musculous substance, composed of soft flesh, because it might be extended and contracted, wrinckled, and stretched forth, and unfolded, and wrested, and shaken at the coming forth of the child, and after be restored to its former soundness and integrity. In process of age it grows harder, both by use of venery, and also by reason of age, by which the whole body in all parts thereof becomes dry and hard. But in growing, and in young women, it is more tractable and flexible for the necessity of nature.

Its magnitude. Composition.

The magnitude is sufficiently large in all dimensions, though divers, by reason of the infinite variety of bodies. The figure is long, round, and hollow. The composition is the same with the wombe, but it receives not so many vessels as the wombe; for it hath none but those which are sent from the *Hypogastrick* veins, by the branches ascending to the wombe. This neck on the inside is wrinckled with many crests, like the upper part of a dogs mouth, so in copulation to cause greater pleasure by that inequality, and also to shorten the act.

Number and site.

It is only one, and that situate between the neck of the bladder and the right gut, to which it closely sticketh, as to the wombe by the proper orifice thereof, and to the privities by its own orifice; but by the vessels to all the parts from whence they are sent.

Temper.

It is of a cold and dry temper, and the way to admit the seed into the wombe, to exclude the infant out of the wombe, as also the menstruall evacuation. But it is worth obser-

vation,

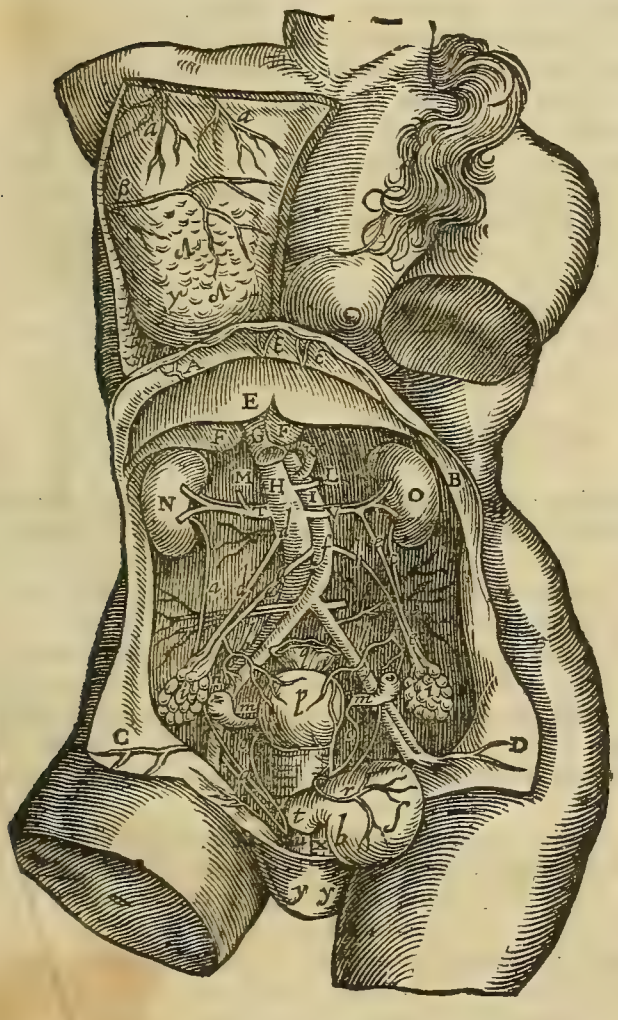
vation, that in all this passage there is no such membrane found, as that they called *Hymen*, which they feigned to be broken at the first coition. Yet notwithstanding *Columbus*, *Fallopius*, *Wierus*, and many other learned men of our time think otherwise, and say, that in Virgins a little above the passage of the urine, may be found and seen such a nervous membrane, placed overthwart as it were in the middle way of this neck, and perforated for the passages of the courses. But you may find this false by experience; it is likely the ancients fell into this error through this occasion, because that in some a good quantity of blood breaks forth of these places at the first copulation.

No *Hymen*.

But it is more probable, that this happens by the violent artrition of certain vessels lying in the inward superficies of the neck of the wombe, not being able to endure without breaking so great extention as that nervous neck undergoes at the first coition. For a maid which is mariageable, and hath her genitall parts proportionable in quantity and bigness to a mans; shall find no such effusion of blood, as we shall shew more at large in our Book of Generation.

From whence the blood proceeds that breaks forth in some virgins at the first coition.

*The thirteenth Figure, shewing the parts of women different from these in men.*




A.B.C.D. The *Peritonæum* reflected or turned backward, above and below.
E.F. the gibbous part of the liver E, the cave or hollow part F.
G. the trunk of the gate-vein.
H. the hollow vein.
I. the great artery.
K. the roots of the *Cœlicall* artery which accompanieth the gate-vein.
L.M. the fatty vein going to the coat of the kidneys.
N. O. the fore-part of both the kidneys.
T. V. the emulgent veins and arteries.
*aa.* the right ureter at the lowest *a*, cut from a part which neer to *b*, sticketh yet to the bladder, because the bottome of the bladder is drawn to the left side.
*c.* the left ureter inserted into the bladder neer to *r*.
*dd.* the spermatick vein which goeth to the left testicle marked with *i*.
*ee.* the spermatick vein which goeth to the left testicle with *i*, also. *f.* the trunk of the great artery from whence the spermatical arteries do proceed. *gh.* the spermatical arteries.
*ii.* the two testicles. *ll*, a branch which from the spermatick vessels reacheth unto the bottome of the womb. *mm.* the leading vessel of the seed which *Fallopius* calleth the *tuba* or trumpet, becaus it is crooked and reflected. *n.* a branch of the spermatick vessel, compassing the leading vessel. *oo.* a vessell like a worm which passeth to the wombe, some call it *Cremaster*. *p.* the bottome of the wombe called *fundus uteri*. *q.* a part of the right gut. *r. s.* the bottome of the bladder whereto is inserted the left ureter, and a vein led from the neck of the wombe neer unto. *t.* the neck of the bladder. *u.* the same inserted into the privity or lap. *x.* a part of the neck of the wombe above the privity. *yy.* certain skinny Caruncles of the privities, in the midst which is the slit, and on both sides appear little hillocks.

*The Figures belonging to the Dugs and Breasts.*

*aa* The veins of the Dugs which come from those, which descending from the top of the shoulder, are offered to the skin. *ß.* the veins of the dugs derived from those which through the arm-hole are led into the hand. *γ.* the body of the Dug or Breast. *δδ.* the kernels and fat between the. *ε.* the vessels of the dugs descending from the lower part of the neck called *jugulum*, under the breast bone.

This neck ends at the privities, where its proper orifice is, which privy parts we must treat of, as being the productions and *appendices* of this neck. This *Pudendum*, or privity, is of a middle substance, between the flesh and a nerve; the magnitude is sufficiently large, the figure, round, hollow, long. It is composed of veins, arteries, nerves, descending to the neck of the wombe, and a double coat proceeding from the true skin and fleshy pannicle; both these coats are firmly united by the flesh coming between them; whereupon it is said, that this part consists of a musculous coat. It is one in number, situate above the *Peritonæum*. It hath connexion with the fundament, the neck of the wombe and bladder by both their peculiar orifices.

It hath a middle temper, between hot, and cold, moist and dry. It hath the same use as a mans *Præputium* or fore-skin, that is, that together with the *Nymphæ* it may hinder the entrance of the air, by which the wombe may be in danger to take cold. The lips of the privities called by the Greeks πτερυγώματα, by the Latines *Alæ*, contain all that region which is invested with hairs; and because we have faln into mention of these *Nymphæ*, you must know that they are as it were productions of the musculous skin, which descend on both sides, from the upper part of the share-bone downwards; even to the orifice of the neck of the bladder, oft times growing to so great a bigness, that they will stand out like a mans yard. Wherefore in some they must be cut off in their young years, yet with a great deal of caution, lest if they be cut too rashly, so great an effusion of blood may follow, that it may cause, either death to the woman, or barrenes of the wombe by reason of the refrigeration by the too great effusion of blood. The latter Anatomists, as *Columbus* and *Fallopius*, besides these parts, have made mention of another particle, which stands forth in the upper part of the privities, and also of the urinary passage, which joyns together those wings we formerly mentioned. *Columbus* cals it *Tentigo*, *Fallopius*, *Cleitoris*, whence proceeds that infamous word *Cleitorizein*, (which signifies impudently to handle that part.) But because it is an obscene part, let those which desire to know more of it, read the Authors which I cited.

*Alæ.* πτερυγώματα.

*Cleitoris, tentigo.*

## CHAP. XXXV.

### *Of the Coats containing the Infant in the wombe, and of the Navell.*

THe membranes or coats containing the Infant in the wombe of the mother, are of a spermatick and nervous substance, having their matter from the seed of the mother. But they are nervous that so they may be the more easily extended, as it shal be necessary for the child. They are of good length and bredth, especially near the time of deliverance, they are round in figure like the wombe.

Their substance, magnitude, figure, and composure.

Their composition is of veins, arteries, and their proper substance. The veins, and arteries, are distributed to them (whether obscurely or manifestly, more or fewer) from the wombe by the *Cotyledones*, which have the same office, as long as the child is contained in the wombe, as the nipples or paps of the nurses after it is born. For thus the wombe brings the *Cotyledones*, or veins, degenerating into them through the coats like certain paps to the infant shut up in them.

The number.

These coats are three in number according to *Galen*; one called the *Chorion*, Secundine, or afterbirth; the other *Allantoides*; the third *Amnios*. I find this number of coats in beasts, but not in women, unless peradventure any will reckon up in the number of the coats, ne *Cotyledones* swollen up, and grown into a fleshy mass, which many skilfull in Anatomy do write, which opinion notwithstanding we cannot receive as true. I could never in any place find the *Allantoides* in women with child, neither in the infant born in the sixth, seventh, eight, or in the full time, being the ninth month, although I have sought it with all possible diligence, the Midwives being set apart, which might have violated some of the coats.

But thus I went about this business, I divided the dead body of the mother crosvse upon the region of the wombe, and taking away all impediments which might either inder, or obscure our diligence, with as much dexterity as was possible, we did not only draw away that receptacle or den of the Infant, from the inward surface of the wombe, to which it stuck by the *Cotyledones*, but we also took away the first membrane which we cald *Chorion*, from that which lies next under it, called *Amnios*, without any rending or tearing for thus we powred forth no moisture, whereby it might be said, that any coat made for the containing of that humor, was rent or torn. And then we diligently looked, having many witnesses and spectators present, if in any place there did appear any distinction of these two membranes, the *Allantoides* and *Amnios*, for the separating the contained humors, and for other uses which they mention.

But when we could perceive no such thing, we took the *Amnios* filled with moisture on the upper side, and having opened it, two servants so holding the portion, that no moisture might flow out of it into the circumference of the *Chorion* or wombe, then presently with

with ſpunges we drew out by little and little all the humidity contained in it, the infant yet contained in it, which was fit to come forth, that ſo the coat *Amnios* being freed of this moiſture, we might ſee whether there were any other humor contained in any other coat beſides. But having done this with ſingular diligence and fidelity, we could ſee no other humor, nor no other ſeparation of the membranes beſides.

He ſhews by three ſeverall reaſons that there is no Allantoides.

So that, from that time I have confidently held this opinion, that the infant in the womb, is only wrapped in two coats, the *Chorion* and *Amnios*. But yet not ſatisfied by this experience, that I might yet be more certain concerning this *Allantoides*, having paſſed through the two former coats, I came to the infant, and I put a quil into its bladder, and blew it up as forcibly as I could, ſo to try, if by that blowing I might force the air into that coat which we queſtioned, as ſome have written. But neither thus could I drive any air from hence, through the navell into the controverted coat, but rather I found it to fly out of the bladder by the privities. Wherefore I am certainly perſwaded that there is no *Allatoides*. Moreover I could never finde nor ſee in the navell that paſſage called the *Urachus*, which they affirm to be the beginning and originall of the coat *Allantoides*. But if it be granted, that there is no ſuch coat as the *Allantoides*, what diſcommodity wil ariſe hereof? ſpecally ſeeing the ſweat and urine of the infant may eaſily, and without any diſcommodity be received, collected, and contained in the ſame coat, by reaſon of the ſmall difference which is between them. But if any object, That the urine by its ſharpneſs and touching will hurt the infant: I will anſwer, there can be no ſo great ſharpneſs in the urine of ſo ſmal an infant; and that, if that there be any, it is tempered by the admixture of the gentle vapor of ſweat.

Beſides, if you conſider, or have regard to the uſe of ſuch an humor (which is to hold up the child, leſt by its weight it break the ties, by which it is bound to the womb;) we ſhal finde no humor more fit for this purpoſe than this ſerous, as which by its thickneſs is much more fit to bear up a weight, than the thin and too liquid ſweat. For ſo we ſee the ſea or ſalt-water carries greater weights without danger of drowning than freſh rivers do. Wherefore I conclude that there is no need, that the urine ſhould be kept and contained in one coat, and the ſweat in another. The Ancients who have writ otherwiſe, have written from obſervations made in beaſts. Wherefore we make but only two coats, the *Chorion* and *Amnios*; the one of which, ſeeing it contains the other, they both ſo encompaſs the child, that they veſt it on every ſide.

*Fallopius* in ſome ſort ſeems to be of this opinion; for he only makes two coats, the *Choron* and *Amnios*; but he thinks the infant makes the water into a certain part of the *Chorn*, as you may perceive by reading of his Obſervations. Both theſe coats are tyed between themſelves by the intercourſe of moſt ſlender nervous fibers, and ſmall veſſels penetrating from the outer *Chorion* to the inner *Amnios*. Wherefore unleſs you warily handle theſe coats, you may eaſily tear the *Amnios* in ſeparating it. They are of the ſame temper with other membranes. Their uſe is different, for the *Chorion* is made both for the preſervation of the veſſels, which it receives from the womb for the generating of the umbilicall veins and arteries, as alſo to keep whole and ſafe the parts which it inveſts.

Their temper and uſe.

But the *Amnios* is to receive and contain the excrementitious and ſerous humors, which the childe ſhut up in the womb is accuſtomed to evacuate. But this coat is very thin and ſoft, but ſtrong and ſmooth, leſt by its touch it might hurt the infant, whereupon it is called the Lambskin-coat.

## CHAP. XXXVI.

### *of the Navell.*

What the Navell is.

THe Navell follows theſe coats; It is a white body, ſomewhat reſembling the wreathen cord, or girdle of the Franciſcan-friers, but that it hath not the knots ſtanding ſo far out, but only ſwelling in certain places, reſembling a knot, only lifted up on one ſide; it ariſes and takes its originall from a fleſhy maſs, which we expreſſed by the name of ſwelling *Cotyledones*, and goes into the midſt of the lower belly of the infant, yea verily into the midſt of the whole body, whoſe root it is therefore ſaid to be. For even as a tree by the root ſucks nouriſhment from the earth, ſo the infant in the womb draws its nouriſhment by the navell. The greatneſs of it in breadth and thickneſs, equals the bigneſs of the little finger. But it is a foot and a half long, ſo that children are brought forth with it, encompaſſing their middle, neck, arms, or legs. The figure of it is round. It is compoſed of two arteries, one vein, and two coats. It hath theſe veſſels from that great multitude of capillary veins and arteries, which are ſeen diſperſed over the *Chorion*. Wherefore the vein entring in at the Navell, penetrates from thence into the hollow part of the Liver, where divided into two, according to *Galens* opinion, it makes the gate and hollow veins. But the arteries, carried by

The Navell is the center of the body.

The figure and compoſure.

*Lib de format. fetus in utero.*

by themſelves the length of the Navell, caſt themſelves into the *Iliacæ*, which they make, as alſo all other, that from thence the vitall ſpirit may be carried by them over all the infant. It hath its two coats from the *Chorion*.

But ſeeing they are mutually woven and conjoined without any *medium*, and are of a ſufficient ſtrength and thickneſs over all the Navell, they may ſeem to make the infants externall skin and fleſhy Pannicle. I know very many reckon two Umbilicall veins, as alſo arteries, and the *Urachus*, by, or through which the urine flows into the coat *Allartoides*. But becauſe this is not to be found in women, but only in beaſts, I willingly omit it, becauſe I do not intend to mention any parts, but ſuch as belong to humane bodies. Yet if there be any, which can teach me, that theſe parts, which I think proper to brute beaſts, are to be found in women, I willingly confeſs, and that to his credit, from whom I have raped ſuch benefit.

There is only one Vein in a childs Navell, but no Urachus.

The other things that may be required concerning the Navell, as of its number, ſite, connexion, temper and uſe, may eaſily appear by that we have ſpoken before. For we have apparently ſet down the uſe, when we ſaid, the Navell was made for that purpoſe, that the infant may be nouriſhed by it, as the tree by the root, by reaſon of the continuation of the veſſels thereof, with the preparing ſpermatick veſſels made by God for that purpoſe, to whom be honor and glory for ever and ever. *Amen.*

## *The End of the third Book.*

# The Fourth Book,

## *Treating of the Vitall parts contained in the* CHEST.

*The* PREFACE.

HAving finiſhed the firſt Book of our Anatomy, in explanation of the naturall parts contained in the lower belly, now order requires, that we treat of the Breſt; that ſo the parts in ſome ſort already explained (I mean the veins and arteries) may be diſpatched after the ſame order and manner, without interpoſition of any other matter.

And beſides alſo that we may the more exactly and chearfully ſhew the reſt of the parts which remain, as the head and limbs, knowing already the originall of thoſe veſſels which are diſperſed through them. To this purpoſe, we will define what the Cheſt is, and then we wil divide it into its parts. Thirdly, in theſe we will conſider which parts contain, and which are contained, that ſo we may more happily finiſh our intended diſcourſe.

### CHAP. I.

*What the Thorax or the Cheſt is; into what parts it may be divided, and the nature of theſe parts.*

THe *Thorax*, or Cheſt, is the middle belly, terminated or bounded above with the coller-bones, below with the Midriff, before with the *Sternum* or breſt, behinde, with the twelve *Vertebra*'s of the back on both ſides, with the true and baſtard ribs, and with the intercoſtall and intercartilagineous muſcles. The containing parts of the Cheſt.

Nature hath given it this ſtructure and compoſition, leſt that being a defence for the vitall parts againſt externall injuries, it ſhould hinder reſpiration; which is no leſs needfull for the preſervation of the native heat diffuſed by the vital ſpirits, and ſhut up in the heart, as in the fountain thereof, againſt internall injuries, than the other fore-mentioned parts againſt externall. For if the Cheſt ſhould have been all bony, verily it had been the ſtronger, but it would have hindred our reſpiration or breathing, which is performed by the dilating and contracting thereof. Wherefore leſt one of theſe ſhould hinder the other, Nature hath framed it, partly bony and griſly, and partly fleſhy. Some render another reaſon hereof, which is, that Nature hath framed the cheſt, that it might here alſo obſerve the order uſed by it in the fabrick of things, which is, that it might conjoin the parts much diſagreeing in their compoſure, as the lower belly, altogether fleſhy, and the head all bony, by a medium partaker both of the bony and fleſhy ſubſtance; which courſe we ſee it hath obſerved in the connexion of the fire and water, by the interpoſition of the air; of the earth and air, by the water placed between them. Why nature hath made the Cheſt partly bony, partly griſly.

The Cheſt is divided into three parts, the upper, lower, and middle; the coller-bones contain the upper; the Midriff the lower; and the *Sternon* the middle. The *Sternon* in *Galens* opinion is compoſed of ſeven bones, I beleeve by reaſon of the great ſtature of the people that lived then. Now in our times, you ſhall oft find it compact of three, four, or five bones, although we wil not deny, but that we have often obſerved it (eſpecially in young bodies) to conſiſt of ſeven or eight bones. The number of the bones of the Sternon.

Wherefore thoſe who have fewer bones in number in their *Sternon*, have them larger, that they might be ſufficient to receive the ribs. This is the common opinion of the *Sternon*. Yet *Fallopius* hath deſcribed it far otherwiſe; wherefore let thoſe who deſire to know more hereof, look in his obſervations.

At the lower part of the *Sternon*, there is a griſle, called commonly *Furcula*, and *Malum granatum*, or the Pomgranate, becauſe it reſembles that fruit; others call it *Cartilago ſcutiformis*, that is, the breſt-blade. Cartilago ſcutiformis, the breſt-blade.

It

It is placed there, to be (as it were) a bulwark or defence to the mouth of the ſtomach, endued with moſt exquiſit ſenſe; and alſo that it ſhould do the like to that part of the Midriff which the Liver bears up in that place, ſituate above the orifice of the ventricle by the ligament coming between, deſcending from the lower part of the ſame griſle into the upper part of the Liver.

The common people think that this griſle ſometimes fals down. But it ſo adheres, and is united to the bones of the *Sternon*, that the falling thereof may ſeem to be without any danger, although oft-times it may be ſo moiſtened with watery and ſerous humidities, with which the orifice of the ſtomach abounds, that (as it were) ſoaked and drunk with theſe, it may be ſo relaxed, that it may ſeem to be out of its place; in which caſe it may be preſſed and forced by the hand into the former place and ſeat, as alſo by applying outwardly, and taking inwardly aſtringent and drying medicines to exhauſt the ſuperfluous humidity.

This Griſle at its beginning is narrow, but more broad and obtuſe at its end, ſomewhat reſembling the round or blunt point of a ſword, whereupon it is alſo called *Cartilago Enſiformis*, or the ſword-like griſle. In ſome it hath a double, in others a ſingle point.

In old people, it degenerates into a bone. Now becauſe we make mention of this griſle, we will ſhew both what a Griſle is, and how many differences thereof there be, that henceforward as often as we ſhall have occaſion to ſpeak of a griſle, you may underſtand what it is.

What a Griſle is. A Griſle is a ſimilar part of our bodies, next to a bone moſt terreſtriall, cold, dry, hard, weighty, and without ſenſe, differing from a bone in drineſs only, the which is more in a bone. Wherefore a Griſle being loſt, cannot be regenerated, like as a bone, without the interpoſition of a *Callus*.

The differences thereof. The differences of theſe are almoſt the ſame with bones, that is, from their conſiſtence, ſubſtance, greatneſs, number, ſite, figure, connexion, action, and uſe. Omitting the other for brevity ſake, I will only handle thoſe differences which ariſe from ſite, uſe and connexion. Therefore griſles, either adhere to the bones, or of, and by themſelves make ſome part, as the griſles of the ey-lids called *Tarſi*, of the *Epiglottis* and throtle. And others which adhere to bones, either adhere by the interpoſition of no medium, as thoſe which come between the bones of the *Sternon*, the coller-bones, the ſhare and haunch-bones, and others; or by a ligament coming between, as thoſe which are at the ends of the baſtard-ribs to the *Sternon* by the means of a ligament, that by thoſe ligaments being ſofter than a griſle, the motions of the Cheſt may be more quickly and ſafely performed. The griſles which depend on bones, do not only yeeld ſtrength to the bones, but to themſelves, and the parts contained in them, againſt ſuch things as may break and bruiſe them. The griſles of the *Sternon*, and at the ends of the baſtard-ribs are of this ſort.

Their twofold uſe. By this we may gather, that the griſles have a double uſe, one to poliſh and levigate the parts to which that ſlippery ſmoothneſs was neceſſary for performance of their duty; and for this uſe ſerve the griſles which are at the joints, to make their motions the more nimble. The other uſe is to defend thoſe parts upon which they are placed, from externall injuries, by breaking violent aſſaults, by ſomewhat yeelding to their impreſſion, no otherwiſe than ſoft things oppoſed againſt cannon-ſhot. We wil proſecute the other differences of griſles in their place, as occaſion ſhall be offered and required.

## CHAP. II.

### *Of the containing and contained parts of the Cheſt.*

The diviſion of the Cheſt into its parts. THe containing parts of the Cheſt are both the skins, the fleſhy Pannicle, the fat, the breſts, the common coat of the Muſcles, the muſcles of that place, the forementioned bones, the coat inveſting the ribs, and the *Diaphragma* or Midriff. The parts contained are the *Mediaſtinum*, the *pericardium* or purſe of the heart, the heart, the lungs and their veſſels. Of the containing parts, ſome are common to all the body, or the moſt part thereof, as both the skins, the fleſhy pannicle and fat. Of which being we have ſpoken in our firſt Book, there is no need now further to inſiſt upon: Others are proper to the Cheſt, as its muſcles, of which we will ſpeak in their place, the breſts, the forementioned bones, the membrane inveſting the ribs, and the *Diaphragma* or Midriff.

We will treat of all theſe in order, after we have firſt ſhewed you the way, how you may ſeparate the skin from the reſt of the Cheſt. Putting your knife down even to the perfect diviſion of the skin, you muſt draw a ſtreight line from the upper part of the lower belly, even to the chin; then draw another ſtreight line, overthwart at the coller-bones even to the ſhoulder-blades; and in the places beneath the coller-bones: (if you deſire to ſhun prolixity) you may at once ſeparate both the skins, the fleſhy Pannicle, the fat, and common coat of the muſcles; becauſe theſe parts were ſhewed and ſpoken of in the diſſection of the lower belly.

Yet

Yet you muſt reſerve the breſts in diſſecting of the bodies of women; wherefore from the upper parts of the breſts, as artificially as you can, ſeparate only the skin from the parts lying under it, that ſo you may ſhew the Pannicle which there becometh fleſhy and muſculous, and is ſo ſpred over the neck and parts of the face, even to the roots of the hairs.

## CHAP. III.

### *Of the Breſts or Dugs.*

THe Breſts, as we ſaid, when we ſpoke of the nature of Glandules, are of a glandulous ſubſtance, white, rare, or ſpongious; in maids and women that do not give ſuck, they are more ſolid and not ſo large. Their ſubſtance.

Wherefore the Ligneſs of the Dugs is different, although of a ſufficient magnitude in all. Their figure is round, ſomewhat long, and in ſome ſort Pyramidall. Their compoſure is of the skin, the fleſhy pannicle, glandules, fat, nerves, veins, and arteries, deſcending to them from the *Axillaris* under the *Sternon*, betwixt the fourth and fifth, and ſometimes the ſixth of the true ribs. Magnitude Figure. Compoſure.

And there they are divided into infinite rivelets by the interpoſition of the glandules and fat, by which fit matter may be brought, to be changed into milk by the faculty of the dugs.

We will ſpeak no more of the nature of glandules or kernels, as having treated of them before; only we will add this, that ſome of the glandules have nerves, as thoſe of the Breſts, which they receive from the parts lying under them, that is, from the intercoſtall, by which it comes to paſs, that they have moſt exquiſit ſenſe. Others want a nerve, as thoſe which ſerve only for diviſion of the veſſels, and which have no action, but only uſe. Which Glandules have nerves, and which have none.

They be two in number, on each ſide one, ſeated at the ſides of the *Sternon* upon the fourth, fifth and ſixth true ribs.

Wherefore they have connexion with the mentioned parts with their body, but by their veſſels with all other parts, but eſpecially with the womb by the reliques of the mamillary veins and arteries, which deſcend down at the ſides of the breſt-blade; in which place theſe veins inſinuating themſelves through the ſubſtance of the muſcles, are a little above the navell conjoined with the *Epigaſtricks*, whoſe originall is in ſome ſort oppoſite to the *Hypogaſtricks*, which ſend forth branches to the womb. By the meeting of theſe it is more likely that this commerce ſhould ariſe, than from other and thoſe almoſt capillary branches, which are ſometimes ſeen to deſcend to the womb from the *Epigaſtrick*. Their connexion. How the breſts and womb communicate each with other.

They are of a cold and moiſt temper, wherefore they ſay that the blood by being converted into milk * becomes raw, flegmatick and white by the force of the proper fleſh of the dugs. Their action is to prepare nouriſhment for the new-born babe, to warm the heart from whence they have received heat, and to adorn the breſt. Their temper. * *Recrudeſcere.* Their action and uſe.

By this you may know that ſome Glandules have action, others uſe, and ſome both. At the top of the dugs there are certain hillocks, or eminencies called teats or nipples, by ſucking of which the childe is nouriſhed through certain ſmall and crooked paſſages, which though they appear manifeſt to the ſight, whilſt you preſs out the milk by preſſing the dug, yet when the milk is preſſed out, they do not appear, nor ſo much as admit the point of a needle, by reaſon of the crooked ways made by nature in thoſe paſſages, for this uſe, that the milk being perfectly made, ſhould not flow out of its own accord againſt the nurſes will. For ſo the ſeed is retained and kept for a certain time in the Proſtats. The Nipples.

## CHAP. IIII.

### *Of the Clavicles, or Coller-bones and Ribs.*

IF we ſhould handle theſe parts after the common order, we ſhould now treat of the Muſcles of the Cheſt which move the arm, and ſerve for reſpiration, and which firſt offer themſelves to our ſight.

But for that they cannot be fitly ſhewed, unleſs we hurt the muſcles of the ſhoulder-lade and neck, therefore I think it better to defer the explanation of theſe Muſcles, untill ſuch time as I have ſhewed the reſt of the contained and containing parts, not only of the Cheſt, but alſo of the Head, that having finiſhed theſe, we may come to a full demonſtration of all the reſt of the muſcles, beginning with thoſe of the head, which we firſt meet with, and ſo proſecuting the reſt even to the muſcles of the feet, as they ſhall ſeem to offer themſelves more fitly to diſſection, that ſo, as much as lyes in us, we may ſhun confuſion.

Wherefore to return to our propoſed task; after the foreſaid muſcles come the Coller-bones, the *Sternon*, and Ribs.

But

But that theſe parts may be the more eaſily underſtood, we muſt firſt know what a bone is, and whence the differences thereof are drawn.

What a Bone is. Therefore a Bone is a part of our body moſt terreſtriall, cold, dry, hard, wanting all manifeſt ſenſe, if the teeth be excepted.

A double ſenſe I ſaid manifeſt ſenſe, that you may underſtand that the parts have a double ſenſe of touching, the one manifeſt, ſuch as reſides in the fleſh, skin, membranes, nerves, teeth, and certain other parts; the other obſcure, yet which may ſuffice to diſcern the helping and hurting tactile qualities, ſuch ſenſe the bowels and bones have; for very ſmall fibers of the nerves are diſſeminated to theſe parts by mediation of their coat, or membrane, I ſay, ſo ſmall, that they can ſcarce be diſcerned by the eys, unleſs (as *Galen* ſaith) by plucking ſuch coats away from the parts.

*Lib. 1. de Locis affectis.*

Why the bones have ſuch ſmal veins. But it is no marvail if Nature would have theſe parts in like manner to have ſuch ſmall veins, contrary to the lungs and moſt part of the muſcles, only to yeeld ſo much nouriſhment to the part, as ſhould be needfull; for ſeeing the ſubſtance of the bones is cold, hard, denſe and ſolid, it waſtes the leſs.

Wherefore they need not ſo much blood for their nouriſhment, as the hot and ſoft parts; and beſides the leſſer bones have neither veins nor arteries, but draw fit nouriſhment, only by the force of the attractive faculty implanted in them.

Whence the difference of bones may be taken. The differences of bones are taken from many things, as from their *Apophyſes*, *Epiphyſes*, griſles, necks, heads, ſolidity, cavity, eminencies, marrow, conſiſtence, bigneſs, number, figure, ſite. We will proſecute all theſe as they ſhall offer themſelves in the demonſtration of the bones; to which doctrine we will give a beginning at the Clavicles or coller-bones.

The Clavicles or coller-bone. The Clavicles are two very hard and ſolid bones, without any great or notable cavity, ſituate on each ſide betwixt the ſide and upper part of the *Sternon* and top of the ſhoulder-blade, for the ſtrength and ſtability of theſe parts, whence they take the name of *Claviculæ* Clavicles, (from the Greek κλεὶς, which ſignifies, a Key or any other Bar or faſtning of a door.) They carry the ſhape of a Surgeons Levatory.

But you muſt note that the Clavicles ſeem to be faſtned to the *Sternon* by the mediation of a griſly bone. Moreover the ſpace and cavity contained within the coller-bones is called by the Latins *jugulum*, by the French the upper *furcula*, becauſe the jugular veins paſs that way; it ſticks to the upper proceſs of the ſhoulder by a Griſle which *Galen* cals the ſmall griſle bone, although it be nothing elſe but a production of the *Os juguli*.

*Lib. 13. de uſu part. cap. 11.*

For the *Sternon*, which we ſaid is framed of divers bones, as ſometimes 3, ſometimes 4, 5, 6, 7, and ſometimes 8, you muſt note they are very ſpongy and full of pores, and of a far ſofter conſiſtence than the coller-bones, wherefore more ſubject to corruption; beſides they are mutually joined by interpoſition of muſcles. Their uſe is to be as a ſhield to defend the vitall parts.

The Ribs. The Ribs are 24 in number, on each ſide 12. ſeven of theſe are called true or perfect ribs, becauſe they make a circle, at the one end joined to the *Sternon*, on the other to the *vertebra's*; the other are called baſtard or ſhort ribs, becauſe they fall ſhort in their way and come not to the *Sternon*; but they are faſtned on the fore-ſide to the *Sternon* by griſles and ligaments, but on the back-part to the tranſverſe *vertebra's* of the back-bone, and to the ſides of the ſaid *vertebra's*. But the ſhort ribs are only knit to the *vertebra's*, wherefore that part of the *vertebra's* is called the root of the ribs.

Their conſiſtence. The exteriour or fore-part of the baſtard or ſhort ribs is griſly, that they ſhould not be broken, and that they might be the eaſier lifted up in the diſtenſions of the ſtomach filled with meat. They are of a conſiſtence ſufficiently hard, yet more towards their root, than at the *Sternon*, where they come nearer together, and are more hardly broken; they are ſmooth both within and without, but in the midſt they have ſome ſign of being double; or hollow to receive the veins and arteries, which nouriſh their bony ſubſtance; they are faſhioned like a bow; their uſe is the ſame with the *Sternon*, and beſides to carry and ſtrengthen the muſcles ſerving for reſpiration.

## CHAP. V.

### *The Anatomicall adminiſtration of the Sternon.*

THe coat inveſting the ribs, which the common Anatomiſts call *Pleura*, is the laſt of the containing parts of the Cheſt, which becauſe it lyes hid in the inner part thereof, it cannot be ſhown unleſs by pulling aſunder of the *Sternon*; wherefore we muſt now ſhew the manner of opening the *Sternon*, that hereby we may not violate the originall or inſertion of any of the muſcles. Wherefore firſt you muſt underſtand that he which will ſhew in their proper place their originall and inſertion of the pectorall muſcles, of the *Maſtoides*, of the two muſcles of the bone *Hyois*, of the muſcles *ſubclavii*, and *intercartilaginei*, ought firſt of all to ſeparate all the pectorall muſcles from

the

the *Sternon* and the griſles from the true ribs; then to cut the ligaments, next the bones themſelves, even from the ſixth true rib to the clavicles.

And then ſhewing the *Mediaſtinum* ſtretched under the *Sternon* all the length thereof, he muſt ſeparate the *Sternon* with his knife, and bend it up to the clavicles, and there cut it, reſerving together with it the four muſcles, that is, the two *Maſtoides*, and the two moving the bone *Hyois*, becauſe they either wholly or for the moſt part ariſe from the *ſternon*.

Laſtly, the Clavicles being ſomewhat thruſt upwards, the griſles muſt on each ſide be turned outwards towards the arm; that ſo the containing parts of the Cheſt may not only lye open to view, and be eaſily ſhewed, but alſo the muſcles may be contained in their place, untill they come to be ſhewed in their order.

And becauſe the coller-bones muſt be lifted up very high, that the recurrent nerves may be more eaſily ſeen, and the diſtribution of the veins and arteries, the two ſmall ſubclavian muſcles, one on each ſide muſt be ſhown by the way, who have their originall from the inner and fore-part of the Clavicles, and an oblique deſcent to the *Sternon* towards the griſle of the firſt rib.

For the Clavicles cannot be thus ſeparated, but that theſe muſcles muſt be violated and ſpoiled. Alſo you may divide the *Sternon* in the midſt, that you may ſhew the inward pectoral muſcles whole, having ſeparated the muſcles which ariſe from the upper part. All which things being performed as they ought, we muſt come to the coat inveſting the ribs, and then to the *Mediaſtinum*, as ariſing from it.

## CHAP. VI.

### *Of the* Pleura, *or coat inveſting the Ribs.*

THe *Tunica ſubcoſtalis*, or coat inveſting the Ribs, being the laſt of the containing parts of the Cheſt, is a large and a broad membrane anſwerable in proportion of uſe and action to the *Peritonæum* of the lower belly. For as the *Peritonæum* generally and particularly covers all the naturall parts, binding and holding them in their places, ſo this coat inveſts all the vitall parts in generall, becauſe it is ſtretched over all the inſide of the Cheſt, but in particular whilſt it gives each a coat from it ſelf. What the membrane inveſting the ribs is.

It hath its original from the *perioſteum* (or as others will have it, from the *perieranium*) inveſting the *vertebra's* of the Cheſt at the roots of the ribs. Wherefore it ſticks very faſt to the ribs, ſcarce to be ſeparated, as alſo to all the parts bounding the Cheſt, and contained in it. Its originall.

*Veſalius* reprehends *Galen*, becauſe he ſaid, that this was double on both ſides; yet *Columbus* defends *Galen*, and verily it is ſeen to be double in the inner part of the Cheſt, under the ribs and the muſcles of the ribs, that in that ſpace there may be way for the veins, arteries, and nerves.

Some have made it twofold, and divided it into the internal and external; as thoſe which have made two ſorts of Plurifies, the true and baſtard; placing the external above the Ribs and intercoſtal muſcles; but the internal under the ribs, muſcles, *Diaphragma* and *Sternon*. Whether, as there is a two-fold Plurifie, ſo alſo a double Pleura.

But we, to ſhun ambiguity, intend only to proſecute thoſe things which are manifeſt to the eys; wherefore we ſay, that the ribs are lined on the inſide with a double coat; on which immediatly and firmly ſticks to them on every ſide called the *perioſtium*, which is common to them and other bones.

The other which lyes upon that *perioſteum*, and on the inſide inveſts all the Ribs, whence it is called the *ſubcoſtalis tunica*. The ſubſtance, temper and compoſure are the ſame, as in other membranes. The magnitude in length, as alſo the figure, is the ſame with the compaſs of the inner part of the Cheſt; the thickneſs of it is very little. This coat is commonly called the *Pleura*, from the name of the part which it covers or lines, (for the Greeks call the ribs πλευραι) and in like manner which happens betwixt the *perioſteum* and this *pleura*, is called either a true or baſtard Plurifie. The magnitude and figure

## CHAP. VII.

### *Of the Mediaſtinum.*

NOw we muſt ſpeak of the parts contained in the Cheſt, ſeeing we have already handled the containing, beginning with the *Mediaſtinum* as being a part which in diſſection firſt preſents it ſelf to our ſight. The *Mediaſtinum* is of the ſame ſubſtance, thicknes, compoſure, number, temper, as the *Pleura*. For the ſubſtance of the *Mediaſtinum* is membranous, and though it be ſtretched al the length of the Cheſt, yet it is of a ſmal thicknes, receiving veins, nerves and arteries from al the parts to which it is knit, like as the *pleura* doth; but eſpecially from the mamillary veſſels, deſcending under the *ſternon*. The ſubſtance and magnitude

It is in number one, but it is made of two membranes produced from the ſubcoſtall, for this aſcending on each ſide by the hollowneſs of the Cheſt to the *ſternon*, and then at right angles it is reflected to the bodies of the *vertebra's*, whence the *pleura* hath its originall.

In that reflection there is ſo much diſtance between each membrane, as may be ſufficient to receive two fingers. For otherwiſe, ſeeing that they cannot penetrate through the heart, it was fit each ſide of the *Pleura* ſhould turn to the *Pericardium*, that ſo they might arrive at the appointed place without offence. Neither yet is that ſpace void and empty, but woven with many ſmall nervous fibers. *Columbus* adds, that that place is often filled with a certain humor beſides nature, which you may draw out or evacuate by opening the *ſternon*.

The figure. Yet I would gladly learn of *Columbus*, by what ſigns we may know that ſuch an humor is contained there. For the figure, the *Mediaſtinum* with the *Pleura* on each ſide, repreſents the figure of a leather bottle, whoſe flat ſide is the *Mediaſtinum*, whoſe other ſide the *Pleura*; the bottom that part of the *Pleura* which is next the Midriff; the mouth the upper part of the *Pleura* at the firſt ribs. We ſhewed the ſite and connexion of the *Mediaſtinum*, when we declared its originall.

The uſe. The uſe thereof is to ſeparate the vitall parts (as it were) into two cels, the right and left, that if peradventure it happen that the one be hurt, the creature may live by the benefit of the other.

And it hath another uſe, which is to prop and hold up the *Pericardium*, that it fall not upon the heart with its weight, but toſſed with the motions of the heart and Cheſt, it may move to this or that ſide.

## CHAP. VIII.

### *Of the* Diaphragma *or Midriff.*

What the Midriff is. ALthough the Midriff may ſeem to be accounted rather a part containg than contained, yet for commodities ſake we have deferred the demonſtration thereof till now. Therefore it is a muſcle round and long, terminating the lower part of the Cheſt.

Its ſubſtance, compoſition, &c. It is of the ſame ſubſtance, compoſition and temper, as the muſcles of the *Epigaſtrium*; it is made of two coats, the lower whereof is from the *Peritonæum*, and the upper from the *Pleura*. Which getting to them fleſh, but not there, but in their circumference, by the benefit of the blood brought thither by the veins and arteries diſtributed through it, turn into a muſcle, whoſe middle is nervous and membranous, but the extremities by which it is inſerted, one while fleſhy, as in that part next to the baſtard ribs; another while tendonous, as where it touches the firſt and ſecond *vertebra's* of the loins, for it ends in them by two Tendons manifeſt enough. It is one in number, interpoſed with an oblique ſite betwixt the naturall and vitall parts.

Connexion. It hath connexion with the lower part of the *Sternon* and ſhort ribs, and the two firſt *vertebra's* of the loins, but by its coats and veſſels with the parts from whence it received them.

Quantity. The extent thereof is equal to the compaſs of the lower part of the Cheſt. The length of it is from the breſt-blade, even to the firſt and ſecond *vertebra* of the loins. The thickneſs is diverſe, for it is far thicker in its fleſhy extremity, than in its nervous originall.

Action. The Action thereof is to help the expulſion of the Excrements by the mutuall aſſiſtance of the *Epigaſtrick* muſcles, but the chief uſe is for reſpiration, of which it is one of the prime inſtruments.

Why the *Diaphragma* was called *Phrenes*. This partition the Ancients called *Phrenes*, becauſe the inflammation thereof cauſed like ſymptomes as the inflammation of the brain, by reaſon of the large nerves on each ſide one, which come to it directly and primarily from the third, fourth, and fifth *vertebra* of the neck. This muſcle differs from other muſcles, ſpecially in figure. It is perforated in three places, to give way or paſſage to the aſcendent Hollow-vein, to the artery *Aorta*, and the Gullet.

## CHAP. IX.

### *Of the Lungs.*

Their ſubſtance. Quantity. The Lobes thereof. THe Lungs are of a ſoft ſubſtance and fleſh, rare and like a ſponge, of a various colour pamered; their quantity is ſufficiently large; for moſt commonly they are divided into four lobes disjoined with a manifeſt and viſible diviſion, on each ſide two, whereby they may be the more eaſily opened and contracted, and the air may the better enter.

Beſides alſo in large bodies, who have a very great Cheſt, there is found a fifth lobe, ariſing from the ſecond lobe of the right ſide, as a cuſhion or bolſter to bear up the Hollow-vein aſcending from the Midriff to the heart.

In little men who have a ſhorter Cheſt, becauſe the heart is ſo near as to touch the *Diaphragma*, this lobe is not ſeen, yet it is always found in Dogs.

Figure. The Lungs repreſent the figure or ſhape of an Oxes foot or hoof, for like it they are thicker

thicker in their baſis, but ſlenderer in their circumference, as you may ſee in blowing them up, by the weazon, with your mouth or a pair of bellows. They are compounded of a coat coming from the *Pleura*, which on each ſide receives ſufficient number of nerves from the ſixth conjugation; and alſo of the *Vena arterioſa* coming from the right ventricle of the heart, and the *Arteria venoſa* from the left, as ſhall be ſhewed in the Anatomy of the heart; beſides the *Aſpera arteria* or weazon coming from the throat; and laſtly its own fleſh, which is nothing elſe than the concretion of cholerick blood poured out like foam about the diviſions of the foreſaid veſſels, as we have ſaid of other parts. Compoſition.

The body of the Lungs is one in number, unleſs you will divide it into two, by reaſon of the variety of its ſite, becauſe the Lobes of the Lungs ſtretched forth into the right and left ſide do almoſt involve all the heart, that ſo they may defend it againſt the hardneſs of the bones which are about it, they are tyed to the heart, chiefly at its baſis, but to the roots of the ribs, and their *vertebra's* by the coat it hath from thence; but by the veſſels to theſe parts from whence they proceed. But oft times preſently from the firſt and naturall conformation they are bound to the circumference of the ribs by certain thin membranous productions which deſcend from thence to the Lungs, otherways they are tyed to the ribs by the *Pleura*. The ſticking of the lungs to the ribs.

The nouriſhment of the Lungs is unlike to the nouriſhment of other parts of the body; for you cannot finde a part equally rare, light, and full of rare, which may be nouriſhed with blood equally thin and vaporous. In temper they incline more to heat than to cold whether you have regard to their compoſure of cholerick blood, or their uſe, which is to prepare and alter the air, that it hurt not the heart by its coldneſs. The Lungs is the inſtrument of voice and breathing by the weazon or wind-pipe. For the Lobes are the inſtruments of voice, and the ligaments, of reſpiration. But the *Larinx* or Throtle is the chief inſtrument of the voice; for the Weazon firſt prepares the voice for the Throtle, in which it being in ſome meaſure formed, is perfected in the palat of the mouth, as in the upper part of a Lute, or ſuch like inſtrument, by the help of the *Gargareon* or *uvula* as a certain quil to play withall. Their nouriſhment.

But as long as one holds his breath, he cannot ſpeak; for then the muſcles of the *Larinx*, ribs, the *Diaphragma*, and the *Epigaſtrick* muſcles are preſſed down, whence proceeds a ſuppreſſion of the vocall matter, which muſt be ſent forth, in making or uttering a voice.

Nature would have the Lungs light for many reaſons; the firſt is, That ſeeing they are of themſelves immovable, they might be more obſequious and ready to follow the motion of the Cheſt; for when it is ſtraitned, the Lungs are ſtraitned and ſubſide with it; and when it is dilated, they alſo are dilated, and ſwell ſo big that they almoſt fill up all the upper capacity thereof. Why the lungs are light.

Another cauſe is, That by this their rarity they might more eaſily admit the entring air, at ſuch times as they have much or ſodain neceſſity, as in running a race.

And laſtly, that in Pluriſies and other purulent abſceſſes of the Cheſt, the *Pus* or matter poured forth into the capacity of the Cheſt, may be ſuckt in by the rare ſubſtance of the Lungs, and by that means the ſooner ſent forth and expectorated.

The uſe of reſpiration is to cool and temper the raging heat of the heart. For it is cooled in drawing in the breath by the cool air, and in ſending out thereof by avoyding the hot ſuliginous vapor. Therefore the Cheſt performs two contrary motions, for whilſt it is dilated it draws in the encompaſſing air, and when it is depreſſed, it expels the ſuliginous vapor of the heart; which any one may eaſily perceive by the example of a pair of Smiths bellows. The uſe of reſpiration or breathing.

## CHAP. X.

### *Of the* Pericardium *or Purſe of the Heart.*

THe *Pericardium* is (as it were) the houſe of the Heart, which ariſing at the baſis thereof (either the ligaments of the *vertebra's* ſituate there, or elſe the veſſels of the heart yeelding it matter) is of a nervous, thick and denſe ſubſtance without any fibers. It retains the figure of the Heart, and leaves an empty ſpace for the heart to perform its proper motions. Wherefore the bigneſs of the *Pericardium* exceeds that of the heart. Whence it hath its matter?

It conſiſts of a double coat, one proper, of which we have ſpoken; another common, coming from the *Pleura*; and alſo of veins, arteries, and nerves; the veſſels partly coming from the mamillary, partly from the *Diaphragma*, chiefly there where it touches it; the nerves come on each ſide from the ſixt conjugation.

It is only one, placed about the heart, and annexed to it at the baſis thereof by its membranes, to the originall of the Lungs, and the *vertebra's* lying under them, and by the veſſels to the parts from whence it received them. It is of a cold and dry temper, as every membrane is. Number and connexion.

The uſe thereof is to cover the heart, and preſerve it in its native humidity, by a certain Uſe.

naturall moiſture contained in it, unleſs you had rather ſay that the moiſture we ſee contained in the *Pericardium*, is generated in it after death by the condenſation and concretion of the ſpirits. Although this ſeems not very likely, becauſe it grows and is heaped up in ſo great quantity in living bodies, that it hinders the motion of the heart, and cauſes ſuch palpitation or violent beating thereof, that it often ſuffocates a man.

From whence the matter of the watery humor contained in the *Pericardium*.

For this Palpitation happens alſo to hearty and ſtout men, whoſe hearts are hot, but blood thin and wateriſh, by reaſon of ſome infirmity of the ſtomach or liver; and this humor may be generated of vapors which on every ſide exhale into the *Pericardium* from the blood boiling in the ventricles of the heart, where kept in by the denſity thereof, they turn into yellowiſh moiſture, as we ſee it happens in an Alembeck.

The Conſiſtence.

Nature would have the *Pericardium* of a denſe and hard conſiſtence, that by the force thereof the heart might be kept in better ſtate; for if the *Pericardium* had bin bony, it would have made the heart like iron by the continuall attrition; on the contrary, if it had been ſoft and fungous, it would have made it ſpongy and ſoft like the lungs.

## CHAP. XXX.

### *Of the Heart.*

What the heart is, and of what ſubſtance

THE Heart, the chief manſion of the Soul, the organ of the vitall faculty, the beginning of life, the fountain of the vitall ſpirits, and ſo conſequently the continuall nouriſher of the vitall heat, the firſt living and laſt dying; which becauſe it muſt have a naturall motion of it ſelf, was made of a denſe, ſolid, and more compact ſubſtance than any other part of the body.

The three ſorts of fibers of the heart.

The fleſh thereof is woven with three ſorts of fibers, for it hath the right in the inner part deſcending from the baſis into the point, that they might dilate it, and ſo draw the blood from the Hollow vein into the receptacles thereof, and the breath or air from the lungs by the *Arteria venoſa*; it hath the tranſverſe without, which paſs through the right at right angles, to contract the Heart, and ſo drive the vitall ſpirits into the great Artery *Aorta*, and the cholerick blood to the Lungs by the *Vena arterioſa* for their nouriſhment; It hath the oblique in the midſt to contain the air and blood drawn thither by the foremention ed veſſels, untill they be ſufficiently elaborate by the heart.

All theſe fibers do their parts by contracting themſelves towards their originall, as the right from the point of the heart towards the baſis, whereby it comes to paſs that by this contraction of the fibers the heart dilated becomes ſhorter, but broader, no otherwiſe than it is made more long and narrow by the contraction of the tranſverſe, but by the drawing of the oblique, it is leſſened in that part which looks towards the *vertebra's*, which chiefly appears in the point thereof.

The magnitude.

It is of an indifferent bigneſs, but yet in ſome bigger, in ſome leſs, according to the diverſe temper of cold or hot men, as we noted in the liver.

Figure.

The figure thereof is pyramidall, that is, it is broader in the baſis, and narrower at his round point.

Compoſition.

It is compoſed of the moſt denſe fleſh of all the body, by the affuſion of blood at the diviſions and foldings of the veſſels, and there concrete, as it happens alſo to the other entrails. For the blood being there a little more dryed, than that which is concrete for the making of the Liver, turns into a fleſhy ſubſtance more denſe than the common fleſh, even as in hollow ulcers, when they come to a cicatrize.

The proper veſſels.

It hath the Coronall veins and arteries, which it receives either on the right ſide from the Hollow vein, or on the left from the baſis at the entrance of the artery *Aorta*. You cannot by your ey diſcern that the heart hath any other nerves than thoſe which come to it with the *Pleura*.

The Nerves.

Yet I have plainly enough obſerved others in certain beaſts which have great hearts, as ſwine; they appeared ſeated under the fat which covers the veſſels and baſis of the heart, leſt the humid ſubſtance of theſe parts ſhould be diſſolved and diſſipated by the burning heat of the heart. Whereby you may perceive that the heat of the heart is different from the Elementary heat, as that which ſuffers fat to grow about this entrail, where otherwiſe it doth not concrete unleſs by cold or a remiſs heat, which thing is chiefly worth admiration.

Number and ſite.

The Heart is one alone, ſituate moſt commonly upon the fourth *vertebra* of the Cheſt, which is in the midſt of the Cheſt. Yet ſome think that it inclines ſomewhat to the left ſide, becauſe we there feel the motion or beating thereof; but that happens by reaſon of its left ventricle, which being it is filled with many ſpirits, and the beginning of the arteries, it beats far more vehemently, than the right. It required that ſeat by the decree of Nature; becauſe that region is the moſt ſafe and armed, and beſides it is here on every ſide covered (as it were) with the hands of the Lungs.

Connexion.

It hath connexion with the fore-mentioned *Vertebra's*, but by the parts compoſing it, with thoſe parts from whence it hath them; with the Lungs by the *Vena arterioſa*, and

and the *Arteria venoſa*; and laſtly, with all the parts of the body by the Arteries, which it ſends to them all.

It is of a hot and moiſt temper, as every fleſhy part is. The action thereof is, firſt to prepare the blood in its right ventricle, for the fit nouriſhment of the Lungs, for from hence it is that *Galen* ſaith, This right ventricle was made for the neceſſity of the Lungs. Secondly, to generate the vitall ſpirits in its left ventricle for the uſe of the whole body. But this ſpirit is nothing elſe than a certain middle ſubſtance between air and blood, fit to preſerve and carry the native heat, wherefore it is named the Vitall, as being the author and preſerver of life. In the inner parts of the heart there preſent themſelves to our conſideration the ventricles and the parts contained in the ventricles and between them; ſuch are the *Valvulæ*, or valves, the veſſels and their mouths, their diſtribution into the Lungs, the wall or partition, and the two productions or Ears of the heart; which becauſe they are doubtfull, whether they may be reckoned amongſt the externall or internall parts of the heart, I will here handle in the firſt place.

Temper and action.

What the vitall ſpirit is.

Therefore theſe *Auriculæ* or Ears are of a ſoft and nervous ſubſtance, compact of three ſorts of fibers, that ſo by their ſoftneſs they might the more eaſily follow the motions of the heart, and ſo break the violence of the matter entring the heart with great force when it is dilated. For otherwiſe by their violent and abundant entrance they might hurt the heart, and (as it were) overwhelm and ſuffocate it; but they have that capacity which we ſee given by nature, that ſo they might (as it were) keep in ſtore the blood and air, and then by little and little draw it forth for the uſe or neceſſity of the heart. But if any enquire, if ſuch matters may be drawn into the heart by the only force of the *Diaſtole*, *ad fugam vacui*, for avoyding of emptineſs; I will anſwer, That that drawing in or attraction is cauſed by the heat of the heart, which continually draws theſe matters to it, no otherwiſe than a fire draws the adjacent air, and the flame of a candle the tallow which is about the weik for nouriſhments ſake. Whilſt the heart is dilated it draws the air, whilſt it is drawn together or contracted it expels it. This motion of the heart is abſolutely naturall, as the motion of the lungs is animall. Some add a third cauſe of the attraction of the heart, to wit, the ſimilitude of the whole ſubſtance. But in my judgment, this rather takes place in that attraction which is of blood by the *venæ coronales* for the proper nouriſhment of the heart, than in that which is performed for attraction of matters for the benefit of the whole body.

The *Auriculæ Cordis*, or ears of the heart.

Theſe Ears differ in quantity, for the right is far more capacious than the left, becauſe it was made to receive a greater abundance of matter. They are two in number, on each ſide one, ſituate at the baſis of the heart: The greater at the entrance of the hollow vein into the heart, the leſs at the entrance of the veinous and of the great Artery, with which parts they both have connexion. We have formerly declared what uſe they have, that is, to break the violence of the matters, and beſides to be ſtays or props to the *Arteria venoſa* and great Artery, which could not ſuſtain ſo rapid and violent a motion as that of the Heart, by reaſon of their tenderneſs of ſubſtance.

Their magnitude and number.

Their uſe.

*Of the ventricles of the Heart.*

THe Ventricles are in number two, on each ſide one, diſtinguiſhed with a fleſhy partition ſtrong enough, having many holes in the ſuperficies, yet no where piercing through.

The partition between the ventricles of the heart.

The right of theſe Ventricles is the bigger, and encompaſſed with the ſofter and rarer fleſh; the left is the leſſer, but is engirt with a threefold more denſe and compact fleſh; for the right Ventricle was made for a place to receive the blood brought by the hollow vein, and for diſtributing of it, partly by the *Vena arterioſa* into the Lungs for their nouriſhment, partly into the left Ventricle, by ſweating through the wall or partition, to yeeld matter for the generation of the vitall ſpirits.

Why the right ventricle is more capacious & leſs compact.

Therefore becauſe it was needfull there ſhould be ſo great a quantity of this blood, it was likewiſe fit that there ſhould be a place proportionable to receive that matter. And becauſe the blood which was to be received in the right ventricle was more thick, it was not ſo needfull, that the fleſh to contain it ſhould be ſo compact; but on the contrary, the arterious blood and vital ſpirit have need of a more denſe receptacle, for fear of waſting, and leſt they ſhould vaniſh into air; and alſo leſs room, that ſo the heat being united, might become the ſtronger, and more powerfully ſet upon the elaboration of the blood and ſpirits.

Why the right ventricle is more capacious & leſs compact.

Therefore the right Ventricle of the heart is made for the preparation of the blood appointed for the nouriſhment of the Lungs, and the generation of the vitall ſpirits, as the Lungs are made for the mitification or qualifying of the Air. Which works were neceſſary if the Phyſicall Axiome be true, *That like is nouriſhed by like*, as the rare and ſpongious Lungs with more ſubtil blood; the ſubſtance of the heart groſs and denſe, with the veinous blood as it flows from the Liver, that is groſs.

The action of the right ventricle.

And it hath its Coronall veins from the Hollow vein, that it might thence draw as much as ſhould be ſufficient.

But the left Ventricle is for the perfecting of the vitall ſpirit, and the preſervation of the native heat,

The action of the left ventricle.

*Of the Orifices and Valves of the Heart.*

The uſes of the four orifices of the Heart.

THere be four Orifices of the heart, two in the right, and as many in the left ventricle; the greater of the two former gives paſſage to the vein, or the blood carried by the hollow vein to the heart; the leſſer opens a paſſage to the *vena arterioſa*, or the cholerick blood carried in it for the nouriſhment of the lungs.

The larger of the two other makes a way for the diſtribution of the Artery *Aorta*, and the vitall ſpirit through all the body; but the leſſer gives egreſs and regreſs to the *Arteria venoſa*, or to the air and fuliginous vapors. And becauſe it was convenient that the matters ſhould be admitted into their proper ventricles by theſe orifices, by the *Diaſtole*, to wit, into the right ventricle by the greater orifice, and into the left by the leſſer; and becauſe on the contrary it was fit that the matters ſhould be expelled by the *Syſtole* from their ventricles, by the fore-mentioned orifices;

The Valves.

Therefore nature to all theſe orifices hath put cleaven valves, that is to ſay, ſix in the right ventricle, that there might be three to each orifice; five in the left, that the greater orifice might have three, and the leſſer two, for the reaſon we will preſently give.

How they differ.
Action.
Site.
Figure.
Subſtance.

Theſe valves differ many ways: Firſt, in action; for ſome of them carry in matter to the heart, others hinder that which is gone out, that it come not back again. Secondly, they differ in ſite, for thoſe which bring in, have membranes without, looking in; thoſe which carry out, have them within looking out. Thirdly, in figure, for thoſe which carry in, have a pyramidall figure, but thoſe which hinder the coming back again, are made in the ſhape of the Roman letter C. Fourthly, in ſubſtance, for the former for the moſt part are fleſhy, or woven with fleſhy fibers into certain fleſhy knots ending towards the point of the heart; The latter are wholly membranous.

Number.
Motion.

Fiftly, they differ in number, for there be only five which bring in, three in the right ventricle at the greater orifice, and two in the left at the leſſer orifice; thoſe which prohibit the coming back, are ſix in each ventricle, three at each orifice. Laſtly, they differ in motion; for the fleſhy ones are opened in the *diaſtole*, for the bringing in of blood and ſpirit, and contrariwiſe are ſhut in the *ſyſtole*, that they may contain all or the greater part of that they brought in. The membranous on the contrary are opened in the *ſyſtole* to give paſſage forth to the blood and ſpirits over all the body, but ſhut in the *diaſtole*, that that which is excluded might not flow back into the Heart. But you ſhall obſerve that nature hath placed only two valves at the orifice of the *Arteria venoſa*, becauſe it was needfull that this Orifice ſhould be always open, either wholly or certainly a third part thereof; that the air might continually be drawn into the heart by this orifice in inſpiration, and ſent forth by exſpiration in the contraction of the heart. Whereby we may gather this, that there is but one third part of that air we draw into the heart in breathing, ſent forth again in the form of vapor in exſpiration, becauſe nature would have but one third part of the orifice to lye open for its paſſage out. Therefore the exſpiration or breathing out, and the *ſyſtole* of the heart and arteries, is ſhorter than the inſpiration, ſo that we may truly ſay, that the inſpiration, or drawing the breath in, is equally ſo long as the exſpiration is together with the reſt, which is in the midſt between the two motions.

Why there be only two Valves that *Arteria venoſa*.

## CHAP. XII.

### *Of the diſtribution of the Vena arterioſa, and the Arteria venoſa.*

HAving hitherto ſhewed the originall of each of the veſſels of the Heart, we muſt now ſpeak of their diſtribution. The *Vena arterioſa*, or the Arterious vein; and the *Arteria venoſa*, or the Veinous artery, each proceeding out of his proper ventricle, that is, the right and left, are divided into two large branches; one of which goes to the right and the other to the left hand, the one lying croſs-ways over the other, the vein always riding over the artery, as you may underſtand better by the ſight of your eys, than by reading of books. Theſe branches at their entrance of the lungs are divided into two other large branches, and each of them go to his peculiar Lobe of the lungs; and theſe again run almoſt into infinit other branches, diſperſed in three places over the Lungs.

The artery always lyes under the vein.

A twofold reaſon why the Vein was made arterious or like an artery.

Theſe veſſels have acquired their names by reaſon of that tranſmutation of conſiſtence, whereby the compoſure of a vein degenerates into an artery, and that of an artery into a vein, for the commodity of life. For this is a miracle of prudent Nature to change the coats of the veſſels of the lungs; producing a vein which in its body ſhould imitate an artery, and an artery which ſhould repreſent a vein: for if the *vena arterioſa* ſhould have retained its proper conſiſtence, the arterious blood which is carried by it from the heart to nouriſh the lungs, might by reaſon of its ſubtilty penetrate through, and flow away by reaſon of the rarity of the veinous texture: and ſo nature ſhould never have attained her conceived

ceived end, that is, to nouriſh the Lungs, by reaſon of the continuall motion of their contraction and dilatation.

For nouriſhment cannot be aſſimilated to the part, unleſs it be put and cleave to it. Wherefore it was fit, that nature ſhould make the body of this vein ſolid, that it might be immoveable, unſhaken and ſtubborn (in reſpect of a vein which by its ſoftneſs would have been too obſequious and yeilding to the agitation of the Lungs) that ſo it might have nouriſhment, which might be diffuſed into all parts thereof, and which might neither be drawn by its *diaſtole*, nor driven back into the heart by its *ſyſtole*. But the artery hath the conſiſtence of a vein, that by that veinous ſoftneſs according to the neceſſity of nature it might be the more readily contracted and dilated, to bring the air in and carry the vapours forth of the heart. Here we meet with a difficulty, which is, by what way the blood is carryed out of the right into the left ventricle of the heart.

Why the Artery was made like a Vein.

*Galen* thinks that there be certain holes in the partition made for that purpoſe; and verily there are ſuch, but they are not perforated. Wherefore *Columbus* hath found out a new way, which is, that the blood is carryed to the lungs by the *vena arterioſa*, and there attenuated; and carried from thence together with the air by the *Arteria venoſa* to the left ventricle of the heart; this he writes truly very probablely. *Botallus* in his treatiſe *de Catarrho* hath found out a third way, to wit, a vein, which he cals *Arteriarum nutrix*, that is, The nurſe of the arteries, which creeps a little above the Coronall to the right ear of the Heart, and then goes into the left ear thereof. But yet I am very much afraid, that this vein obſerved by *Botallus*, is that veſſel obſerved by *Fallopius*, whereby the *Vena arterialis* is joyned to the *Aorta*, and by which all the vitall blood is carried for the forming and nouriſhment of the lungs whilſt the infant is yet in the womb. Of which alſo *Galen* makes mention, but it had lain hid from his time to this day, but that *Fallopius* raiſed up the memory of it again.

By what way blood may paſs out of the right into the left ventricle.

The vein called the nurſe of the arteries.

*Fallop. Initio obſer. Arteriarum. Gal. lib. 15 de uſu part. cap. 6.*

## CHAP. XIII.

### *The diſtribution of the aſcendent Hollow vein.*

THe Hollow vein riſing out of the gibbous part of the Liver, and reſembling (according to *Galen*) the body of a tree, is divided into two notable branches, but not of a like bigneſs. For the greater, by the hind part of the Liver upon the back bone & by the way, receives certain other branches from the ſubſtance of the Liver which entred not into the great trunck with the reſt. You may often ſee this deſcendent branch even to the back bone upon which it lies in this its deſcent, covered with the ſubſtance of the liver, ſo that it may ſeem that branch proceeds not from that common trunck together with the aſcendent, although indeed it alwayes doth. But the leſſer branch aſcends to the upper parts, and is diſtributed after this manner following. For firſt ariſing into the midriffe it beſtows two ſmall veins upon it, on each ſide one, which from that part are called *Phrenicæ*. But from thence when it arrives at the right Ear of the Heart, it makes the *Coronales*, the Coronall or Crown veins, which compaſs the *baſis* of the heart in manner of a Crown. Thirdly, entring ſomewhat more deeply into its right Ear, in its greater part it produces the *vena arterioſa*. Fourthly, lifted up above the heart, on the right ſide it produces the vein *Azygos* or *ſine pari* (that is, without a fellow) which deſcending to the fourth rib, (reckoning from above downwards) nouriſheth the intercoſtall muſcles and alſo the membranes of the eight lower ribs, on both ſides, ſending a branch into each of the muſcles at the lower part of the rib, which may be ſufficient for their nouriſhment. Beſides alſo oftentimes, eſpecially in little men, this vein *Azygos* nouriſhes all the ſpaces between all the ribs by the like branches, which it ſends in the ſame manner to the four upper ribs. Moreover alſo this *Azygos* ſometimes, though but ſeldome, is found double, that is, on each ſide one. Here you muſt chiefly obſerve, that this vein after it hath nouriſhed the ſpaces between the lower ribs, in its remainder deſcends under the *Diaphragma* and is joyned on the left ſide to the Emulgent vein; by which it is manifeſt how an Abſceſs may be critically evacuated by the urine, in a pluriſie. But this ſame *Azygos* is more depreſſed on the right ſide, and meets with the *Venæ lumbares*, but eſpecially with one of them, which goes down to the thigh, whereby *Fallopius* gathers that it is very convenient in the beginnings of Pluriſies to open the *vena poplitis*, the vein of the Ham. Fifthly above the *Azygos* (when it is wanting there) it ſends forth the branch called *Intercoſtalis* to the other ſpaces between the upper ribs; although this is ſometimes ſeen to come from the *Axillares*, which *Sylvius* cals the *ſubclaviæ*. Sixtly, it brings forth the *Mammariæ*, ſo called, becauſe in their greater part they run to the dugs between the fourth and fifth ribs, for the uſes formerly mentioned; men and women have on each ſide one of theſe coming from the *Subclaviæ*. They are ſometimes found to proceed by a certain common orifice from the hollow vein, before it be divided into the *Subclavian* branches, but it is rather in beaſts than in men; theſe veins deſcending by the ſides of the *ſternon* yeild nouriſhment to the two inner muſcles of the cheſt, to the ſeven intercoſtall muſcles of the true ribs, to the *ſternon* it ſelf and

*Gal. lib de form. fœtus.*

The greater deſcendent branch of the hollow vein.

The upper branch of the hollow vein is the leſs.

*Venæ phrenicæ.*

*Coronales.*

*Vena Arterioſa.*

*Vena Azygos, or ſine pari.*

This *Azygos* ſometimes two.

How the matter of a pluriſie may be evacuated by urin.

*Intercoſtalis.*

*Mammariæ.*

to

to its ligaments and griſtles,as alſo to the *Mediaſtinum* & the upper part of the right muſcles, and the adjacent parts. Seaventhly,it produces the *Cervicalis*, which on both ſides through the holes of the productions of the *Vertebra's* of the neck, aſcends to the head,ſending many ſmall branches into the ſpinall marrow through the holes by which the nerves paſs,and alſo into the membranes, ligaments, griſtles, bones, and neighbouring muſcles. Eightly, the *Muſculoſa* or muſculous, which alſo ariſing out of the *Subclaviæ* is divided into two other branches,the one whereof goeth upon the breſt to the paps nouriſhing the foremoſt muſcles; wherefore in a baſtard pluriſie cupping-glaſſes may be fitly applied in this place.

*Cervicalis.*

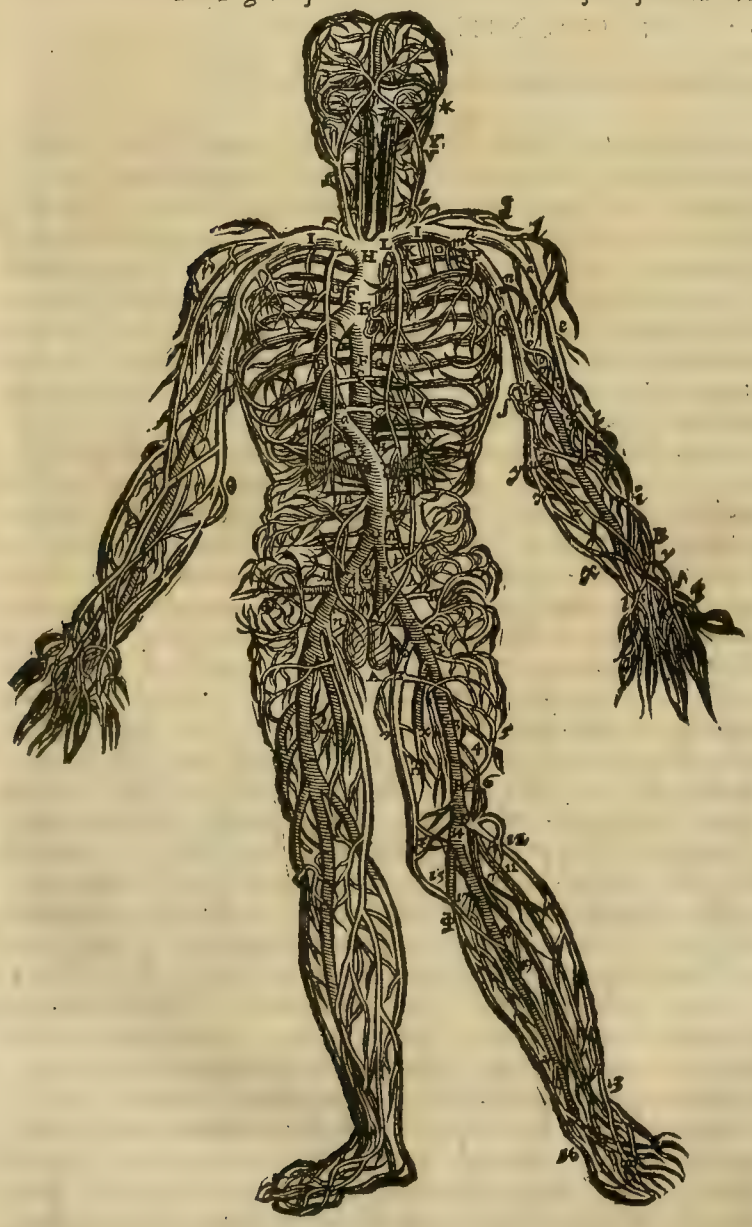
*Muſculoſa.* In what place cupping glaſſes may be fitly applyed in a baſtard pluriſie.

The other branch deſcends to the upper muſcles of the cheſt,but ſpecially to that which is called *Latiſſimus*. The tenth is the *Axillaris*. The eleventh the *Humeralis*,of which we will treat in their place. The twelfth and laſt is the *Jugularis* properly ſo called, which is twofold,the internall and externall. The internall being the leſſer doth preſently on both ſides from this very beginning aſcend by the ſides of the *Aſpera Arteria* or weazon even to the mouth and skull, yeilding nouriſhment to the parts by which it paſſes,as to the next membranes and nerves. But when it comes to the *baſis* of the *Cranium* it is divided into two branches, the greater whereof going back along the *baſis* of the *Cranium* to the hind part thereof, ſending a branch to the long muſcle ſituate upon the *œſophagus*,it enters the *Cranium* with the ſmall *Carotides* through the hole of the nerves of the ſixt conjugation, where they become one common veſſell. The leſſer ſending a ſlip to the organ of hearing by the hole called *Cæcum* (or the blind) alſo enters the *Cranium* and is ſpent in the thicker *meninx* neer to the hole of the third and fourth conjugation of nerves.The externall Jugular vein being greater and fairer,moſt commonly ſimple,yet ſometimes double,either preſently at his beginning,or a little after,aſcends ſuperficially on both ſides of the neck, between the broad muſcle,or fleſhy pannicle,being there eaſie to be diſcerned,and other muſcles ſituate at the ſides of the neck,into which as alſo into the skin it ſends certain branches for nouriſhment.

*Axillaris.*
*Humeralis.*
*Jugularis interna, externa.*
Into what parts the *Jugularis interna* goes.

Into what parts the *Jugularis externa* goes.

*The Figure of the hollow vein whole and freed from the reſt of the body.*



*A*, The trunk of the hollow vein. The lower *AA*,At this place of the Liver, is ſeated the left part of the vein, and diſtributeth branches to the left ſide.

*B.* Sheweth how the trunk of the hollow vein in the cheſt (to give way to the heart) is curved or bowed to the right hand.

Betwixt A.and B. that part of the hollow vein which is betwixt the gibbous ſide of the Liver and the Midriffe.

*C.* The left midriffe vein called *Phrenica ſiniſtra*, from which ſurcles do run in a man unto the purſs of the heart, for the midriffe and it do grow together.

*D.* The orifice of the hollow vein which groweth unto the heart.

*E.* the crown-vein called *coronaria*, which like a crown compaſſeth the baſis of the heart, and ſprinkleth his ſurcles on the outſide thereof as far as to the cone or point.

*FF.* The trunk of the vein *Azygos* or *non paril*, deſcending along the right ſide of the rack-bones unto the loins.

*GG.*the lower intercoſtal veins,to the branches of the vein *Azygos*,which go unto the diſtan-

ces

ces betwixt the ribs, and afford ſurcles unto the muſcles which lie upon the ribs and the rack-bones, and the membranes of the cheſt. *H.* the diviſion of the hollow vein into two ſubclavian trunks near the Iugulum under the breſt-bone. *II.* the ſubclavian branch tending on either ſide unto the arm; called by ſome *Axillaris*. *K.* the upper intercoſtall vein which commonly ſendeth three ſlips unto the diſtances of the upper ribs, unto which the firſt intercoſtall vein ſent no branches. *LL.* the deſcending mammary vein: this deſcendeth under the breſt-bone unto the right muſcles of the *Abdomen*, and affordeth ſurcles to the diſtances of the griſtles of the true ribs, to the Mediaſtinum, the muſcles that lye upon the breſt and the skin of the *Abdomen*. *M.* the conjunction of the mammary with the Epigaſtrick vein aſcending about the navill under the right muſcles. *N.* the vein of the neck called *Cervicalis*, aſcending towards the skull, which alloweth ſurcles to thoſe muſcles that lie upon the neck. *O.* the vein called *Muſcula*, which is propagated with many ſurcles into the muſcles that occupie the lower parts of the neck and the upper parts of the cheſt. *P. Thoracica* ſuperior, the upper cheſt vein which goeth to the muſcles lying upon the cheſt, to the skin of that place and to the dugs. *Q.* the double *Scapularis* diſtributed into the hollow part of the ſhoulderblade and the neighbour muſcles: ſo alſo betwixt *P.* and *R.* ſometimes ſmall veins do reach unto the glandules that are in the arm-holes. *R. Thoracica inferior* running downward along the ſides of the cheſt, and eſpecially diſtributed into the muſcle of the arm called *Latiſſimus*. *S.* the inner Jugular vein which entreth into the Scull after it hath beſtowed ſome ſurcles upon the rough artery. *T.* the externall Jugular vein. *V.* the diviſion of this vein under the root of the ear *X.* a branch of the externall Jugular which goeth into the inſide of the mouth, and is diverſly divided into the parts therein contained. *Y.* the exterior branch diſtributed near the *Fauces* into the muſcles of the chops and the hole skin of the head. *Z.* a portion of the branch. *y.* reaching unto the face. *a.a.* the vein of the fore-head. *a.* a portion of it creeping through the temples. *æ.* * a propagation that goeth unto the skin of the Nowl or *Occiput*. *a.a.* the vein called *Cephalica*, or the externall vein of the arm which others call *Humeraria*. *b*, *Muſcula ſuperior*, a propagation of the *Cephalica* vein which goeth unto the backward muſcles of the neck. Betwixt *b.* and *d.* on the backſide iſſueth a branch from the *Cephalica* which paſſeth unto the outſide of the blade, and a portion thereof runneth betwixt the fleſh and the skin. *d.d.* a vein from the *Cephalica* which attaineth unto the top of the ſhoulder, and is conſumed into the muſcle that elevate thor lifteth up the arm, and into his skin. *e.e.* a ſmall vein from the *Cephalica* diſperſed through the skin and the muſcles of the arm. *f.* the diviſion of the *Cephalica* into three parts. *g.* the firſt branch runneth deep unto the muſcles which ariſe out of the externall protuberation of the arm. *h.* the ſecond branch which goeth to make the *median* vein. *i.i.* the third branch running obliquely above the wand and the outſide of the arm. *k.* from this branch certain circles are divided into the skin, the chief whereof is marked with *k.* *l.* the third branch at the wriſt which is joyned at *l.* with the branch of the *Baſilica* marked with *x.m.* the *Baſilica* which on the right hand is called *Hepatica*, on the left hand *Lienaris*. *n.o.* a branch of the *Baſilica* going to the heads of the muſcles of the cubit at *n.* and to the muſcles themſelves at *o.p.* a notable branch of the *Baſilica* running obliquely, and beſtowing ſurcles upon the muſcles that iſſue from the externall protuberation. This branch deſcendeth together with the fourth nerve. *q.* diviſion of the *Baſilica* into two branches and that is noted with *q.* is ever accompanied with an artery. *ſ.* a branch of this vein beſtowed upon the skin of the arm. *t.* a branch of the *Baſilica* which together with the branch of the *Cephalica* marked with *h.* makes the *mediana* or middle vein marked with *a.u.* a branch of the *Baſilica* going to the inner head of the arm, *xx.* a branch iſſuing out of the former that creepeth along unto the wriſt and toward the little finger conjoyning it ſelf with a branch of the *Cephalica*. *y.* A vein running out unto the skin at the outſide of the cubit. Upper *z.* a propagation iſſuing out of a branch of the *Baſilica* marked with *t.* lower *z.* a branch of the *Baſilica*. *æ*, going to the inſide of the Arm. *α*, the *Median* or common vein. *β*, the partition of the Median vein above the wriſt: This diviſion ſhould have been made above *γ*, *γ* the Externall branch of the partition which goeth to the outſide of the head. *δ*, from which iſſueth a ſmall branch to the inſide. *ε*, the internall branch under *ζ*, which toward the middle and the ring finger is eſpecially diſpoſed. *η* the vein of the thumb diſperſed into the mountenet or hillock, which is conjoyned with the branch noted with *δ.ζ*, the trunk of the hollow vein from which iſſue branches unto the parts ſeated under the liver. *θ*, the fatty vein called *Adipoſa ſiniſtra*, which goeth unto the fat of the kidneys. *ι*, the two Emulgents which lead wheyey blood unto the kidneys. *κμ*, the two ſpermaticall veins leading the matter of the ſeed unto the teſticles. *V*, the beginning of the bodden veſſell called *vas varicoſam*. *ξ*, the veins of the loins called *Lumbares*, which are ſent in the knots or knees to the rackbones, to the marrow of the back, to the muſcles that lie upon the loins, and to the *Peritonæum*. *ο*, the bifurcation of the hollow vein into the Iliack branches, which bifurcation is not unlike. *λ*, *π*, *Muſcula ſuperior*, a tranſverſe branch going to the muſcles of the *Abdomen*, and to the *Peritonæum*. *ρ*, the diviſion of the left Iliack vein, into an inner branch at *ρ*, and an utter at *σ.τ*, *Muſcula media* the utter propagation of the branch *ρ*, diſtributed through the muſcles of the *coxa* and the skin of the buttocks, *υ*, an inner propagation of the ſame

branch

branch ♂, which goeth unto the holes of the holy bone. ♃, the vein called *Sacra*, which goeth to the upper holes of the holy bone. ♄♀, the vein *Hypogaſtrica* diſtributed to the bladder, to the muſcles of the fundament, and the neck of the womb. ☿, a vein ariſing from the utter branch marked with ♂, which is joyned with ſome branches of the internall vein, near the holes or perforations of the ſhare-bone. 3 1. a vein which when it hath paſſed the ſhare-bone diſtributeth one branch into the cup of the *coxendix* and to the muſcles of that place. ☿, another ſmall branch which runneth under the skin at the inſide of the thigh. ♄, the congreſs or meeting of the foreſaid vein, with a branch marked with char. 2. and diſtributed into the leg. 1, the *Epigaſtrick* vein, a propagation of the utter branch ♂, perforating the *Peritonæum*, whereto as alſo the muſcles of the *Abdomen*, and the skin it offereth branches, the chief branch of this vein is joyned with the deſcending mammary above the navill at *M*. ♃, *Pudenda* an inner propagation of the branch. ♂, running overthwart unto the privities. ☉☽ *Saphæna* or the ancle vein or the inner branch of the crurall trunk, which creepeth through the inſide of the leg under the skin unto the tops of the toes. ♃, the firſt interior propagation of the *Saphæna* offered to the groin. ♎, the utter propagation thereof divided to the foreſide or outſide of the thigh. ♊, the ſecond propagation of the *Saphæna* going to the firſt muſcle of the leg. ♄, the third propagation of the *Saphæna* going to the skin of the whirle-bone, and unto the ham. ☽, the fourth propagation of the *Saphæna* diſperſing his muſcles forward and backward. ♈, branches from this unto the foreſide of the inward ankle, to the upper part of the foot, and to all the toes. ♌, *Iſchias minor*, called alſo *Muſcula interior* the utter branch of the crurall trunk divided into the muſcles of the *coxendix*, and to the skin of that place. 1, 2, and this alſo may be called *muſcula*. 1, the exterior and leſſer which paſſeth into ſome muſcles of the leg. 2, the interior greater and deeper unto the muſcles of the thigh. 3, 4, the vein called *Poplitea*, made of two crurall veins divided under the knee. 5, From this a ſurcle is reached upward unto the skin of the thigh. 6, but the greater part runs by the bent of the knee under the skin as far as the heel. 7, alſo to the skin of the outward ankle. 8, the vein called *Suralis* or calf vein, becauſe it runneth unto the muſcles that make the calf of the leg. 9, The diviſion of the Surall vein into an exterior trunk 9, and an interior 14. 10, 11, the diviſion of the exterior trunk under the knee into an externall branch, which along the brace attaineth unto the muſcles of the foot. 11, and an internall. 12, 13, 12, 13. which deſcending along the outſide of the leg to the upper part of the foot is cloven into divers branches, and in the back of the foot mixeth it ſelf with *Poplitea*, or the ham vein. 20. 14. the interior branch of the Surall vein which runneth into the backſide of the leg. 15, a branch hereof deſcending to the inſide of the heel and the great toe, and is divided into divers ſurcles. 17, *Iſchias major* iſſuing out of the internall trunk at 14, and running through the muſcles of the calf. 18, a propagation hereof derived unto the upper part of the foot, and affording two ſurcles to every toe. 19, the remainder of the inner trunk. 14. behind the inner ankle, approacheth to the bottom of the foot and is conſumed into all the toes. 20, the commixion of the vein *Poplitea* with the ſmall or calf-branch at 13.

Where the externall jugular vein may be fitly opened in inflammations of the parts of the mouth.

But when it arrives to the baſis of the lower part of the head, it is divided into more branches, one whereof is carried to the muſcles of the bone *Hyois*, the *Larinx*, the tongue and the lower part of the tongue (in which place it is commonly opened in the ſquinances, and other inflammations of the mouth) and to the coat of the noſe. Another is carried to the *Dura mater*, paſſing on both ſides through a hole ſituate under the bone *maſtoides*, and beſides, aſcending to the bone of the back part of the ſcull, it comes obliquely to the upper part of the future *lambdoides*, where theſe branches meeting together, paſs into the reduplication of the *Dura mater*, dividing the fore-part of the brain, that ſo joined and united, they may make the *torcular*; the third aſcendent is diſtributed upon the back-part and baſis of the lower jaw, to the lips, the ſides of the noſe, and the muſcles thereof; and in like manner to the greater corner of the eyes, to the fore-head and other parts of the face, and

Vena recta.

at length by meeting together of many branches, it makes in the forehead the vein which is called *vena recta* or *vena frontis*, that is, the forehead vein. The fourth aſcending by the glandules behind the ears, after it hath ſent forth many branches to them, is divided into two others, one whereof paſſing before, and the other behind the ear, are at length

Vena pupis.

ſpent in the skin of the head. The fifth and laſt wandring over all the lower part of the head, going to the back part thereof, makes the *vena pupis*, which extended the length of the head by the ſagitall ſuture, at length goeth ſo far, that it meets with the *vena frontis*, which meeting is the cauſe, that a vein opened in the forehead, is good in griefs of the hinder part of the head, and ſo on the contrary. But we muſt obſerve that in the *Cranium* of ſome, the *vena pupis* by one or more manifeſt paſſages ſends ſome portion thereof to the inner part of head, ſo that the *vena pupis* being opened may make revulſion of the matter which cauſeth the internall pains of the head.

CHAP.

## CHAP. XIIII.

### *The diſtribution of the Nerves, or ſinews of the ſixth conjugation.*

BEcauſe the diſtribution of the arteries cannot be well ſhewed, unleſs we violate thoſe nerves which are carryed over the Cheſt, therefore before we ſhew the diſtribution of the arteries, we will as briefly as we can, proſecute the diſtribution of theſe nerves. Three pair of nerves of the ſixt conjugation.

Now the ſixth conjugation brings forth three pair of nerves; for, paſſing out of the ſkul, as it comes down to the Cheſt, it by the way ſends forth ſome branches to certain muſcles of the neck, and to the three aſcendent muſcles of the *Larinx* on each ſide of the *Sternon* and upon the clavicles. Then the remainder deſcending into the Cheſt, is divided on each ſide into theſe three pair. The firſt pair makes the *Ramus coſtalis*. The ſecond, the *Ramus recurrens*. The third pair, the *Ramus ſtomachicus*. The *Ramus coſtalis*, or coſtall branch is ſo called, becauſe deſcending by the roots of the ribs, even to the holy bone, and joining themſelves to theſe which proceed from each of the *Vertebra's* of the ſpine, they are carryed to all the naturall parts. *Ramus Coſtalis.*

The *Recurrens*, or recurrent is alſo ealled, becauſe as it were ſtarting up from the cheſt, it runs upward again, but theſe two Recurrent nerves do not run back from the ſame place; but the right from below the artery, called by ſome the axillary, by others Subclavian, and the left from beneath the great artery, deſcending to the naturall parts. But each of them on each ſide aſcending along by the weazon, even to the *Larinx*, and then they inſinuate themſelves by the wings of *Cartilago ſcutiformis*, and *Thyroides* into the proper muſcles, which open and ſhut the *Larinx*. *Recurrens.*

An anatomical *Axiome.*

By how much the nerves are nearer the originall, to wit, the brain, or ſpinall marrow, they are by ſo much the ſofter. On the contrary, by how much they are further abſent from their originall, they are ſo much the harder and ſtronger, which is the reaſon that Nature would have theſe recurrent nerves to run back again upwards, that ſo they might be the ſtronger to perform the motions of the muſcles of the *Larinx*. But the *Stomachicus* or ſtomach-branch is ſo called, becauſe it deſcends to the ſtomach or ventricle. For this branch deſcending on both ſides by the ſides of the gullet, ſends many branches from it into the inner ſubſtance of the lungs, into the coat thereof, into the *Pericardium* and heart; and then coming into the upper orifice of the ſtomach, it is ſpent in many branches, which folded after divers manners and wayes, chiefly makes that mouth or ſtomach, which is the ſeat of the Animall appetite (as they term it) and hunger, and the judger of things convenient or hurtfull for the ſtomach. But from thence they are diverſly diſſeminated over all the body of the ventricle. Why nature would have the vocall nerves recurrent. *Ramus ſtomachicus.*

Moreover the ſame branch ſends forth ſome ſmall branches to the liver and bladder of the gall, giving each part by the way, ſo much ſenſe as ſhould be ſufficiently neceſſary for it. Here you muſt note, the ſtomach branch deſcends on each ſide one, knit to the gullet, and by the way they divide themſelves into two branches, each of which goes to the oppoſite ſide, that it may there join it ſelf to the nerve of that ſide. To which purpoſe the right is carried above the gullet, the left below it, ſo that theſe two ſtomatick become four, and again theſe four preſently become two.

## CHAP. XV.

### *The Diviſion of the Arteries.*

THe Artery ariſing forth of the left ventricle of the heart, is preſently (the two Coronall Arteries being firſt ſpred over the ſubſtance of the heart) divided into two unequall branches. The greater whereof deſcends to the lower parts, being diſtributed, as we formerly mentioned in the third book, and 22. Chapter. The leſſer aſcending to the upper parts, is again divided into two other unequal branches, the leſſer of which aſcending towards the left ſide, ſends forth no artery from it, untill it arrive at the rib of the Cheſt, where it produces the ſubclavian artery, which is diſtributed after the manner following. The left branch of the aſcendent artery is leſs then the right. The diſtribution of the left ſubclavian artery into the

Firſt, it produces the intercoſtall, and by it imparts life to the three intercoſtall muſcles of the four upper ribs, and to the neighbouring places. 1 *Intercoſtalis.*

Secondly, it brings forth the Mammillary branch, which is diſtributed as the Mammillary vein is. 2 *Mammaria.*

Thirdly, the *Cervicalis*, which aſcends along the neck by the tranſverſe productions to the *Dura mater*, being diſtributed as the *Vena Cervicalis* is. 3 *Cervicalis.*

Fourthly, paſſing out of the Cheſt, from the back part of the Cheſt, it ſends forth the *muſculoſa*, whereby it gives life to the hind muſcles of the neck, even to the back part of the head. 4 *Muſculoſa.*

Fiftly,

5 *Humeraria duplex.*

Fiftly, having wholly left the Cheſt, it ſends forth the two *Humerariæ*, or ſhoulder arteries, the one whereof goes to the muſcles of the hollow part of the ſhoulder blade, the other to the joynt of the arm and the muſcles ſituate there, and the gibbous part of the ſhoulder blade.

6 *Thoracica duplex.*

Sixthly and laſtly, it produces the *Thoracica*, which alſo is twofold, for the one goes to the fore muſcles of the Cheſt, the other to the *Latiſſimus*, as we ſaid of the vein, the remnant of it makes the *Axillaris* of that ſide.

The diſtribution of the right ſubclavian artery.

The other greater branch likewiſe aſcending by the right ſide, even to the firſt rib of the Cheſt, makes alſo the ſubclavian of that ſide, which beſides thoſe diviſions it makes on this ſide, like thoſe of the left ſide, hath alſo another which makes the right and left *Carotides* or ſleepy arteries; which aſcending undivided with a nerve of the ſixth conjugation and the internall jugular vein, by the ſides of the *Aſpera Arteria* or windpipe, when they come to the *Pharinx*, they are divided on each ſide into two branches, the one internall, the other externall. The internall and greater is ſent to the *Pharinx*, *Larinx*, and tongue; then entring into the head by the long hole and the back part of the upper jaw, it ſends many branches to the noſe, eyes, the inſide of the temporal muſcles and to the *Craſſa meninx*, or *Dura mater*: the remainder of this branch going by the ſide holes of the ſame, that it might there make the *Plexus admirabilis* as we ſee. And then it is ſpent npon the baſis of the brain abundantly diffuſed over the *tenuis meninx* or *Pia mater*, & then the membrane or *Plexus Choroides*. The external or leſſer branch of the ſleepy arteries goes to the cheeks, the temples, & behind the ears; laſtly, it ſends a branch into the long muſcle of the neck, with which the internal Jugular vein inſinuates it ſelf into the *Dura mater*, entring by the hole of the nerves of the ſixth conjugation.

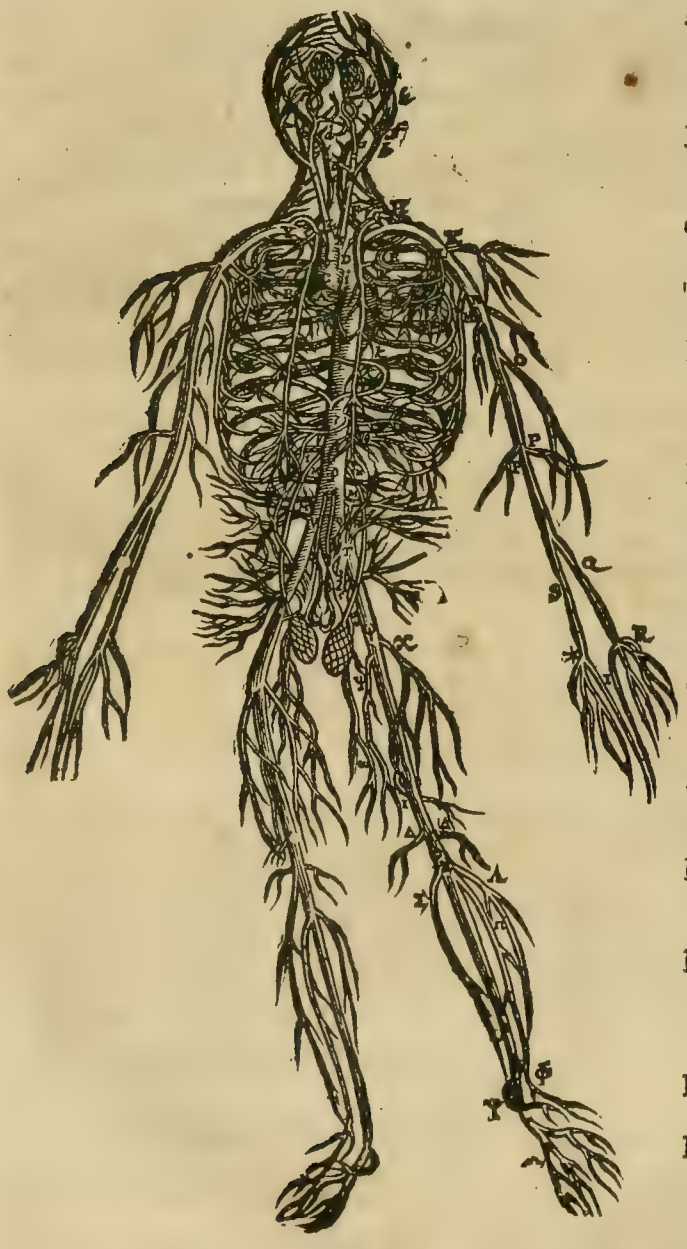
The Carotides, or ſleepy arteries.

Their diviſion.

The diſtribution of the internall branch of the ſleepy arteries.

To what parts the externall branch of the ſleepy artery arrives.

*The Figure of the Arteries.*



A. The orifice of the great Artery, or the beginning thereof, where it iſſueth out of the heart.

B. *Coronaria*, ſo called, becauſe like a crown it compaſſeth the baſis of the heart.

C. The diviſion of the great artery into two trunks, V. *i.*

D. The left ſubclavian climbing obliquely upward unto the ribs.

E. the upper intercoſtall artery, or a branch which beſtoweth four propagations unto the diſtances of the lower rib.

F. The neck artery which through the tranſverſe proceſſes of the rackbones of the neck, attaineth to the ſcull, beſtowing ſurcles unto the marrow and his neighbour muſcles.

G. The left Mammary artery running under the breſt-bone, and to the navill.

It diſtributeth ſurcles to the *Mediaſtinum*, the muſcles of the breſt, and of the *Abdomen*.

H. *Muſcula*, or a branch attaining to the backward muſcles of the neck.

I. The *Scapular* arteries which go unto the hollowneſs of the blade, and of the muſcles that lie thereon.

K. *Humeraria* which climbeth over the top of the ſhoulder

L. *Thoracica ſuperior*, ſprinkled unto the forward muſcles of the Cheſt. M. *Thoracica inferior*; which paſſing along the ſides of the Cheſt, attaineth to the *broad* muſcles of the arm. N. the axillarie artery running out into the arm and affording branches unto the muſcles thereof. O. A branch reaching

to

to the outſide of the cubit lying deep. PP. Branches to the joint of the cubit with the arm. Q. The upper branch of the artery running along the *Radius* and offering ſurcles to the thumb, the fore-finger, and the middle finger. *k*. A ſurcle creeping unto the outſide of the hand, and led betwixt the firſt bone of the thumb and that of the after-wriſt, ſupporteth the fore-finger where we uſe to feel the pulſe. S. the lower branch of the artery running along the *Vlna* and communicating ſurcles to the little finger, the ring finger, and the middle finger. * A little branch unto the muſcles about the little finger. T. the diſtribution of the upper and lower branches into the hand and the fingers. V. the trunk of the great artery aſcending to the *Jugulum*, and the diviſion thereof in that place into *X*, *Y*, *Z*. *X*. the left *Carotis* or ſleepy artery. *Y*. *Subclavian dextra* is divided into branches, as the right is divided. *Z*. *Carotis dextra*, called alſo *Apoplectica* and *Lithargica*. *a*. the diviſion of the left *Carotis* in the chops. *b*. the exteriour branch of that diviſion going into the face, the temples, and behind the ears. *c*. the inner branch going to the throttle, the chops, and the tongue. *d*. the diviſion hereof at the baſis of the skull, into two branches which enter the *ſinus* of the *Dura mater*. *e*. a propagation of the branch *b*. unto the muſcles of the face. *f*. the diſtribution of the branch *b*. under the root of the ear. *g*. the fore-branch hereof creeping up the temples. *h*. the back branch running on the backſide of the ear under the skin. *i*. the trunk of the great artery, deſcending unto the ſpondells of the back. *kkk*. the lower *Intercoſtall* arteries which go unto the diſtances of the eight lower ribs, from which are offered ſurcles to the marrow, and to the muſcles that grow to the back and to the Cheſt. *l*. the artery of the midriffe called *Phronica* or *Diaphragmatica*. ζ, *Meſenterica Superior*, but you muſt note that above ζ, the trunk of the *Cœliacall* artery is taken away, leſt the multitude of letters in ſo ſmall a Table ſhould breed obſcurity. *η*, θ, the right and left emulgents running from the *Aorta* or great arterie unto the kidnies. *ιι*, *κκ*, the ſpermaticall arteries on either ſide going to the teſticles. λ, the lower Meſentericall artery on the left below *μ*, running eſpecially into the Colick gut on that ſide. *μμ*, the arteries called *Lumbares*, which run overthwart and like knees, affording ſurcles to the muſcles that grow to the loins, and to the *Peritonæum*. *μ*. the lower; *Muſcula ſuperior* running into the ſides of the *Abdomen* and the muſcles. *νν*. the bifurcation of the great artery into two *iliack* trunks, and at the ſides, but ſomewhat inward are branches which make thoſe that are called *Sacræ*. T. the diviſion of the left *Iliack* trunk into an inner branch at ξ and an utter at ρ. ξ. the inner *Iliack* branch. *ο*, *Muſcula inferior*, the utter propagation of the inner branch going unto the muſcles which cover the branch bone and the *Coxendix*. *π*. *Hypogaſtrica*, the inner propagation of the inner branch going to the bladder, the yard and the neck of the womb. ϱ. the umbilicall artery. *ς*. the remainder of the branch ξ, aſſuming an addition from the utter branch neer ρ, and ſo falling through the hole of the ſhare-bone into the leg. *τ*. *Epigaſtrica*, it aſcendeth upward unto the right muſcle of the *Abdomen*, and about the navell is joyned with the mammary artery. *υ*. *Pudenda*, it creepeth overthwart the ſhare-bone. φ. the *Crurall* trunk without the *Peritonæum*. χ. *Muſcula cruralis exterior*, going into the fore muſcles of the thigh. ψ. *Muſcula cruralis interior*, going unto the muſcles of the inſide of the thigh. ω. The conjunction of this artery with the branches. Γ. *Poplitea*, going to the muſcles on the backſide of the thigh. ΔΔ. which communicateth ſmall branches to the joint of the knee, and the muſcles that make the calfe of the leg. Θ. the diviſion of the *Crurall* artery under the ham into three branches. Λ. *Tibiæa exterior*, it accompanieth the brace-bone, and is conſumed into the muſcles. Ξ. the chief part of the *crurall* artery. Σ. the upper and backer *Tibiæa*. ΠΦ. the lower and backer *Tibiæa* running unto the upper ſide of the foot at Φ. Ψ. a propagation of the crurall artery going to the inner and upper ſide of the foot, and ſprinkling a branch unto the ankle. Ω. a propagation unto the lower part of the foot which affordeth ſurcles to each toe.

But we muſt note that there be more veins in a mans body, than arteries, and beſides that the veins are far thicker. For there is no need for preſerving the native heat in the parts themſelves, either of ſo many, or ſo large inſtruments of that kind. Therefore you may often find veins without arteries, but never arteries without veins.

But we underſtand that an artery is a companion to a vein, not only when it touches it, or adheres to it by common membranes, as uſually it happens; but alſo when it is appointed together with the vein for the uſe of the ſame part.

## CHAP. XVI.

### *of the* Thymus.

THe *Thymus* is a glandule, of a ſoft, rare, and ſpongious ſubſtance, of large bigneſſe, ſituate in the furtheſt and higheſt part of the Cheſt, amongſt the diviſions of the ſubclavian or Jugular veins and arteries, as yet contained in the Cheſt, for this uſe; that it might ſerve theſe veſſels for a defence againſt the bony hardneſſe of the Cheſt, and beſides, that as it were by this prop or ſtay, the diſtributions of theſe

What the *Thymus* is.

The uſe.

The magnitude.

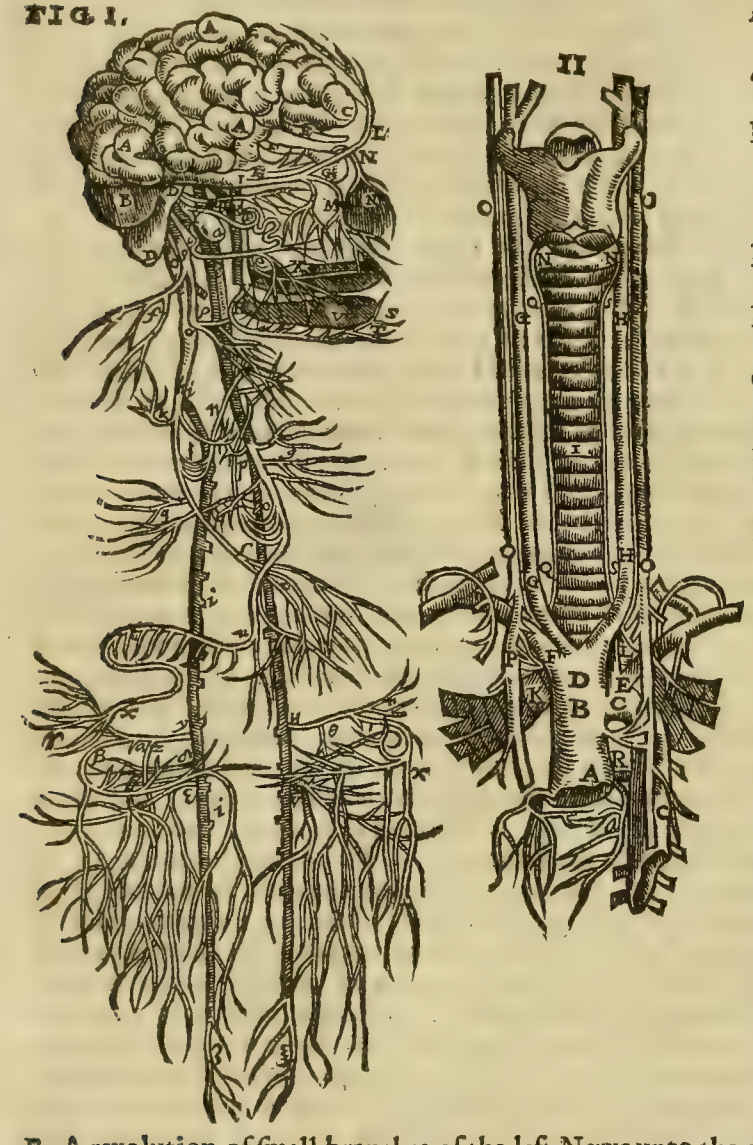
veſſels might become the ſtronger; for ſo we ſee that nature hath provided for others, eſpecially ſuch as are the more noble and worthy. This glandule appears very large in beaſts and young men, but in ſuch as have attained to full growth it is much leſs, and ſcarce to be ſeen.

## CHAP. XVII.

### *Of the* Aſpera Arteria, *the rough Artery or Weazon.*

*The Figure of the* Aſpera Arteria *or Weazon.*

FIG. 1.



A. The orifice of the great artery cut from the heart.
*aa.* the coronall arteries of the heart.
B. C. D. the diviſion of the great artery in two trunks, the deſcending C. the aſcending D.
E. the left axillarie, or ſubclavian artery.
F. the right axillarie or ſubclavian artery.
G. the right *Carotis* or ſleepy artery.
H. the left *Carotis*.
I. the trunk of the rough artery or weazon.
K.L. The diviſion of the rough artery into two branches, of which the right goes into the right, and left into the left ſide of the lungs; which branches are again ſubdivided into many other.
M. the head of the Rough Artery called the *Larinx* or *Throttle*.
N.N. Certain Glandules or Kernells at the root of it.
OO. the right and liſt nerves of the ſixth and ſeaventh conjugation. P. A revolution of ſmall branches of the right nerve to the right *Axillary* Artery. QQ. The right Recurrent Nerve.
R. A revolution of ſmall branches of the left Nerve unto the deſcending trunk of the great Artery. SS. The left recurrent Nerve.

The ſubſtance.

THe *Aſpera Arteria* or Weazon ſeeing it is the inſtrument of voice and reſpiration, is of a griſtly, ligamentous, and wholly various ſubſtance. For if it had been one rough, and continued body with the *Larinx* or throttle, it could not be neither dilated, nor compreſſed; opened, nor ſhut, neither could it order the voice according to our deſire.

Compoſure.

It is compoſed of veins from the internall Jugular, of arteries ariſing from the *Carotides*, and of nerves proceeding from the Recurrent branch, of a double membrane, of which the externall comes from the *Peritonæum*; the internall, which is the ſtronger and woven with right fibers, from the inner coat of the mouth, the which is common with the inner coat of the *œſophagus* or gullet. And alſo it conſiſts of round griſtles, yet not drawn into a perfect circle, compoſed in manner of a channell, and mutually joyned together in order, by the ligaments that proceed from their ſides and ends.

Why the back part of the Weazon is ligamentous.

Theſe ſame ligaments perfect the remnant of the circle of this *Aſpera Arteria*, on that part next the gullet; which is thought to be done to this end; that that ſoftneſs of a ligament, might then give place, when we ſwallow harder and greater gobbets of meat. Of the two ſorts of ligaments which are annexed to the griſtles of the weazon, ſome tie and faſten together the rings or circles, which give means both to it, and theſe circles

to

to be drawn in length; otherſome bring theſe griſtles into a perfect circle, which alſo yeeld them means of dilatation. Theſe ligaments cover the inner ſuperficies, but the griſtles are placed without, to reſiſt the incurſion of externall injuries. But we muſt note, that by this communion of the inner coats of the weazon and gullet, we reap this benefit in the commodiouſneſs of the action, that one of theſe parts being depreſſed, the other is lifted up, like a rope running in a wheel or pully. For thus whilſt the gullet is depreſt to ſwallow any thing, the weazon is lifted up; and on the contrary when the ſtomach riſes up in vomiting, the weazon is depreſt. It is only one, and that ſeated between the *Larinx* (from which it takes its beginning) and the lungs in which it ends; firſt dividing it ſelf into two large branches, the right and the left, and beſides each of theſe entring into the ſubſtance of the lungs, is again divided into two others; to each of the Lobes one; and to conclude, theſe be ſubdivided into infinite others, through the ſubſtance of the Lobes.

Why the fore-part is griſtly.

The number and ſite. The diviſion of the weazon through the Lobes of the Lungs.

All theſe branches are griſtlely even to the ends. They are ſituate between the ends of the *Artera venoſa*, and the *Vena arterioſa*, that the entrance of the air into the heart by the *arteria venoſa* might be ſpeedier, as alſo the paſſage out of the vapour, by the *vena arterioſa*. Thus it hath connexion with theſe in the ends, or utmoſt parts thereof, but by the other parts compaſſing it, with the members from whence it takes them. The temperament thereof is cold and dry. The action is to carry the air to, and vapours from the lungs; that by dilating, but this by preſſing the griſtles together.

The temper and action.

## CHAP. XVIII.

### *Of the Gullet.*

THe *OEſophagus*, or Gullet, which is the paſſage of the meat and drink, is of a middle ſubſtance between the fleſh and ſinews, becauſe it conſiſts of one nervous membrane and another fleſhy. The nervous is placed the innermoſt, and is continued to the inner coat of the mouth even to the Lips, (whereby it comes to paſs,) that the Lips tremble in diſeaſes which are ready to be judged by a criticall vomiting, and to the inner part of the *Aſpera Arteria*; it conſiſts of right Fibers for the attraction of the meat, which we ſee is ſometimes ſo quick and forcible in hungry people, that they have ſcarce time to chaw it, before they find it, to be pluckt down, as it were with a hand. The fleſhy Coat placed without is woven with tranſverſe fibers, to haſten the going of the meat into the ſtomach, and for expulſion in vomiting and breaking of wind. Theſe two coats are continued with the two coats of the ſtomach, and have the like ſite. Beſides, the Gullet hath theſe parts compoſing it, as a vein from the Gate and Hollow aſcendent vein; a nerve from the ſixt conjugation, an Artery from that which creeps alongſt the bottome of the ſtomach with the *vena Gaſtrica*, or elſe from the Arteries aſcending the hollow part thereof; but alſo beſides all theſe veſſels it may have a third coat from the membrane inveſting the Ribs, or *Pleura*. The magnitude of the Gullet is large enough, yet ſome be bigger, ſome leſs, according to the variety of bodies. The figure of it is round, that ſo it might be more large to ſwallow meat, and leſs ſubject to offence. It is placed between the back bone and weazon from the roots of the tongue even to the ſtomach. But as it deſcends alongſt the back bone, when it comes to the fourth *Vertebra* of the Cheſt, it turns to the right ſide, to give way to the great Artery *Aorta* and the deſcendent Artery, then it turns to the left ſide to the ſtomach, or mouth of the ventricle. Nature hath faſtened it to the *Diaphragma* with ſtrong membranous ties, leſt that if it had lain upon the Artery it ſhould have hindred the paſſage of the vitall ſpirit to the lower parts. It is only one and that tyed to the forementioned parts, both by its veſſels and membranes. It is of temper rather cold than hot, as all thoſe parts, which are more nervous than fleſhy, are. The Action thereof is to draw and carry down the meat, and to caſt forth ſuch things by vomit as trouble the ſtomach. Here you muſt note, that whilſt we ſwallow down, the Gullet is drawn downwards, and the weazon upwards, which is the cauſe that we cannot ſup and blow, ſwallow and breath together at the ſame inſtant; which we muſt think to happen by Gods ſingular providence; to whoſe name be glory for everlaſting, Amen.

The ſubſtance.

Attractive force thereof.

The compoſure.

The magnitude. The Figure, Site.

Temper and action. Why we cannot ſup and blow at one time.

*The End of the fourth Book.*

# The Fifth Book,

## *Of the Animall parts contained in the* HEAD.

### CHAP. I.

*A Generall deſcription of the Head.*

HAving hitherto declared two generall parts of mans body, that is, the Naturall and Vital, it is now fit to betake our ſelves to the laſt, that is, the Animall, beginning with the Head.

Wherefore we will firſt define the head, then divide it into its parts; thirdly, deſcribe each of theſe parts; fourthly, demonſtrate them after the order they offer themſelves to our ſight in diſſection.

What the head is. Why ſeated in the higheſt place.

The head therefore is the ſeat of the ſenſes, the Palace and habitation of reaſon and wiſdome, from whence as from a fountain infinite actions and commodities ariſe. It is ſeated above the reſt of the body, that the Animall ſpirit from thence, as from a tower, may govern and moderate the whole body, and perform all actions according to the præſcript of nature. By the head we underſtand all that which is contained from the Crown of the head to the firſt *vertebra* of the neck.

The figure.

The beſt figure of the head is round, lightly flatted on each ſide, *extuberating* ſomething to the fore and hind part thereof. For from hence is taken an argument of the goodneſs of the ſenſes; on the contrary, thoſe which are exactly round, or acuminate, and ſharp towards the top, are not thought good. The head is divided into the face, forehead, temples, the forepart, the crown and hind part.

The diviſion thereof.

By the face we underſtand, whatſoever is contained between the Eye-brows and the lower part of the chin. By the forehead, all the ſpace from the eye-brows even to the Coronall Suture. By the temples, whatſoever is hollowed from the leſſer corner of the eye, even to the ears. By the forepart of the head, whatſoever runs in length from the top of the forehead, or the Coronall Suture, even to the Suture *Lambdoides*, and on each ſide to the *Oſſa petroſa*, the ſtony bones, or ſcaly Sutures. By the Crown we ſignifie a certain point exquiſitely in the midſt of the Sagittall Suture, which is ſufficiently known. By the *Occiput* or hind part of the head, that which is terminated by the Suture *lambdoides*, and the firſt *vertebra* of the neck.

The containing parts of the head.

Of all theſe parts there be ſome ſimple, ſome compound, beſides ſome are containing, ſome contained. Of the containing ſome are common to all the parts of the head, as the skin, the fleſhy pannicle and *pericranium*; others are proper to certain parts, as the fleſhy pannicle to the neck, face, forehead, and skin covering the *Cranium*, the common coat of the muſcles to the fat and face; the skull and both the *Meninges* to the brain.

The parts contained.

The parts contained are the ſubſtance of the brain, the four ventricles, and the bodies contained in them, the nerves, the mamillary proceſſes; the *Plexus Choroides* or *Rete Admirabile*, the *Glandula Baſilaris*, and others of which we will ſpeak hereafter.

We muſt now ſpeak of the containing parts beginning with the skin; for the order of teaching requires that we take our *Exordium* from the more ſimple, but firſt we will ſay ſomething of the hair.

What the hair is. The uſe thereof.

The hair is nothing elſe than an excrement generated and formed of the more groſs and terrene portion of the ſuperfluities of the third concoction, which could not be waſted by inſenſible tranſpiration. The benefit of it is, that conſuming the groſs and fuliginous or ſooty excrements of the brain it becomes a cover and ornament for the head.

This hair of the head and eye-browes have their originall from the firſt conformation of the infant in the womb, the reſt of the hairs of the body ariſe and grow forth as the body grows and becomes more dry, of which ſort are the hairs which cover the chin, armholes, groins, and other parts of our bodies.

CHAP.

## CHAP. II.

### *Of the muſculous skin of the Head, (commonly called the hairy ſcalpe) and of the* Pericranium.

THe skin which covers the skull, and is covered with the hair, is far more fleſhy, thick, hard and dry than any other part of the body, eſpecially which wants hair. The skin hath almoſt the like condition of quality as thoſe parts have, which it doth ſimply cover, but is as it were loſt in them, or grown into one with them, as in the lips and forehead with the fleſhy pannicle, wherefore it is there called muſculous; in other places it adheres to the griſles, as on the ſides of the noſtrills and corners of the Eyes, whereupon it is there called griſlely.

What the hairy ſcalp is.

It hath connexion with the *Pericranium*, becauſe joyned to it, it receives nerves from the firſt and ſecond *Vertebra* of the neck, and from the third conjugation of the brain which are diſſeminated through all its ſubſtance, whereby it comes to paſs, that the wounds, contuſions, and impoſthumes, that happen in or upon this skin, are not to be neglected.

Its connexion

The * *Pericranium*, (but I ſuppoſe it ſhould be the *Perioſteum*) is a moſt thin membrane, which next and immediately covers all the bones of the body, and this on the head is called by a peculiar name the *Pericranium* by reaſon of the excellency of the *Cranium* or skull, in other bones it is tearmed the *Perioſtium*: And as the *Pericranium* takes its originall from the *Craſſa meninx* propagating it ſelf by certain ſtrings or threds ſent forth by the ſutures and holes of the skull, ſo all other membranes of the body have their originall either from this *Pericranium*, or *Craſſa meninx*, ſending forth their productions, as well by the holes or paſſages of the head, as by theſe of the ſpinall marrow or back bone it ſelf, even to the Holy bone.

* Our Author with *Fallopius* and *Laurentius* confounds the *pericranium* and *perioſteum*: but *Veſalius Bauhinus* and *Bartholinus* diſtinguiſh them making the *pericranium* thin and ſoft, and the *perioſteum* moſt thin and nervous, and of moſt exquiſite ſenſe.

Why the wounds thereof muſt not be neglected.

Of which this is an argument, for in what part ſoever of the body a membrane is hurt, preſently the hurt or ſenſe thereof comes to the *Craſſa meninx*. For ſo thoſe who have but their little Toe hurt when they ſneeſe, or cough, perceive an increaſe of their pain, by the paſſage thereof to the brain.

The *Pericranium* and *perioſteum* of the ſame nature.

The uſe of this *Pericranium* is to cover the skull; and to give notice of things hurtfull, by the power of the quick ſenſe which it is endued withall, and the *Pereoſtium* doth the like in other bones. Beſides it ſuſtaines and faſtens by the ſutures the *Craſſa meninx* to the skul; leſt it ſhould fall by reaſon of its weight upon the *Pia mater*, and ſo hurt it, and hinder the pulſation of the brain and arteries that are plenteouſly ſpread through both the *Meninges*. Wherefore the *Pericranium* hath moſt ſtrait connexion with the *Craſſa meninx*, becauſe it takes the originall from thence.

Whence all the membranes proceed.

Why when any membranous part is hurt in any part of the body, the head is affected be conſent.

We muſt think the ſame of the other membranes of the body, which thing is very notable in the ſolution of the continuity of the membranes.

The uſe of the *Pericranium*.

## CHAP. III.

### *Of the Sutures.*

THe Sutures do ſew or faſten together the bones of the skull; theſe be five in number. Three are true and legitimate, two falſe and ſpurious. The Coronall, the firſt of the true Sutures, is ſeated in the forepart of the head, deſcending downwards overthwart the forepart of the head to the midſt of the temples; it is ſo called, becauſe *Corollæ*, that is, wreaths, crowns, or garlands, are ſet upon that place.

Their uſe and number.

The ſecond is called the *Sagittalis*, or right ſuture, as that which running through the crown divides the head into two equall parts, as with a ſtraight line, running the length of it from the Coronall to the *Lambdoides* or hind Suture.

But this third Suture *Lambdoides*, is ſo called becauſe it repreſents this Capitall greek letter Lambda Λ. You muſt underſtand this deſcription of the Sutures, not as alwayes but as for the greater part to be thus. For there be ſome skulls that want the foremoſt Suture, otherſome the hind, and ſometimes ſuch as have none of the true Sutures, but only the falſe and ſpurious. But alſo you ſhall ſometimes find the Sagittal to run to the noſe.

Some skulls want Sutures.

And oft times there be three or four Sntures in the back part of the head, ſo that indeed the number of the Sutures is not certain. Which alſo we find obſerved by *Cornelius Celſus*; where he writes, that *Hippocrates* was deceived by the Sutures by chance, for that he conjectured that the bones of the back part of the head, were broken; becauſe his Probe thruſt to the roughnes of the ſecond ſuture *Lambdoides*, ſtaied as at a cleft made in the bone by a ſtroak.

*Celſ. lib. 8, cap. 4°.*

The other two are called the falſe, ſtony and ſcaly Sutures, by reaſon they are made by a ſcaly conjunction of the bones, but not by a toothed ſaw or comb-like connexion. But if any ask, why the head conſiſts not of one bone, that ſo it might be the ſtronger: I anſwer

Why the ſcull conſiſts of divers bones.

it is, that ſo it might be the ſafer both from internall and externall injuries. For the skull being as it were the tunnel of the chimney of this humane fabrick, to which all the ſmoky vapours of the whole body aſcend, if it had been compoſed of one bone, theſe vapours ſhould have had no paſſage forth.

In what bodies and by what means the *vena pupis* ſometimes enters into the parts within the ſcall.

Wherefore the groſſer vapours paſs away by the Sutures, but the more ſubtile by the pores of the skull; ſome have their Sutures very open, but others on the contrary very cloſe.

Therefore nature hath otherwiſe compendiouſly provided for ſuch as want Sutures; For it hath made one or two holes, ſome two fingers bredth from the *Lambdoides*, through which the *Vena pupis* enters into the skul, and they are of that largeneſs that you may put a points tag into them, that ſo the vapours may have free paſſage forth, otherwiſe there would be danger of death; thus nature hath been carefull to provide for man againſt internall injuries; and in like manner againſt externall, for it hath made the head to conſiſt of divers bones, that when one bone is broken the other may be ſafe, the violence of the ſtroak being ſtayed in the diviſion of the bones.

In what men one part of the being head ſtricken, the oppoſite is broken.

Whereby you may know, that if the skull chance to be broken in the oppoſite ſide to that which received the blow, that it happens either by reaſon of the defect of ſutures, or elſe becauſe they are unperfect, & too firmly cloſed; otherwiſe it is unpoſſible ſuch fractures ſhould happen by reaſon of the ſeparation of the bones, which breaks the violence of the blow that it can go no further.

Why we muſt not apply a Trepan to the Sutures.

And certainly, as it is rare to find a skull without Sutures, ſo it is rare to find ſuch kind of fractures. Therefore Chirurgeons muſt diligently obſerve the Sutures and fite of them, leſt they be deceived and take them for fractures, or unawares apply a Trepan to them, whence by breaking the veins, arteries and nervous fibers by which the internall parts communicate with the exterhall, there may enſue increaſe of pain, a violent defluxion of blood upon the *Craſſa meninx*, and the falling thereof upon the brain, (the fibers being broken by which it ſtuck to the *Pericranium*) and ſo conſequently a deadly interception of the pulſion of the Brain.

## CHAP. IIII.

### *of the* Cranium, *or Skull.*

What the *Cranium* or skul is.

THe *Cranium*, or Skull covering the brain like an Helmet, is compoſed and conſiſts of ſeaven bones, of which ſome are more denſe, thick and hard than other ſome. The firſt is the *Os occipitis*, or Nowl bone ſeated in the back part of the head, more hard and thick than the reſt, becauſe we want hands and eyes behind, whereby we may keep or ſave our ſelves from falling.

Why the nowl bone is harder than the reſt.

This bone is circumſcribed, or bounded by the ſuture *Lambdoides*, and the * *Os baſilare*. The eminencies and as it were heads of this bone are received into the firſt *Vertebra*; for upon this the head is turned forwards and backwards, by the force of fourteen muſcles and ſtrong ligaments, which firmly tye theſe heads of the Nowl bone in the cavities of this firſt *vertebra*.

* My Author means by the *Os Baſilare* in this place the wedg bone: but ſome Anatomiſts make it a *Synonyma* of this *Os occipitis*.

The ſecond bone of the skull is in the forepart, and is called the *Os coronale* or *Os frontis* the forehead bone, it hath the ſecond place in ſtrength and thickneſs. It is bounded by the Coronall ſuture, and the ends of the wedgbone: in this forehead bone there is often found a great cavity under the upper part of the eyebrows, filled with a glutinous, groſs, viſcid and white matter or ſubſtance, which is thought to help to elaborate the air for the ſenſe of ſmelling.

The forehead bone, next to the nowl bone is harder than the reſt.

A Cavity to be obſerved in the forehead bone.

Chirurgeons muſt take ſpecial notice of this cavity, becauſe when the head chances to be broken in that place, it may happen, that the fracture exceeds not the firſt table; wherefore being ignorant of this cavity, and moved with a falſe perſwaſion that they ſee the brain, they may think the bone wholly broken, and to preſs the *Meninges*, whereupon they will dilate the womb, and apply a Trepan and other inſtruments to lift up the ſecond table of the bone, without any need at all, and with the manifeſt danger of the life of the patient.

*Oſſa parietalia & Bregmatis.*

The third and fourth bones of the skull are the *Oſſa parietalia*, or *Bregmatis*, having the third place of denſity and thickneſs; although this denſity and thickneſs be different in divers places of them. For on the upper part of the head, or crown, (where that ſubſtance turns not to a bone in children untill they have all their teeth, ſo that it feels ſoft in touching, & through it you may feel the beating of the brain) theſe bones are very tender, ſo that oft times, they are no thicker than ones nail, that ſo the moiſt and vaporous excrements of the brain, ſhut up where the greater portion of the brain reſides, may have a freer paſſage by the Brains *diaſtole* and *ſyſtole*. Theſe two ſquare bones are bounded above with the Sagittall ſuture, below with the ſcaly, on the forepart with the coronall, and on the hind part with the *Lambdoides*.

*Oſſa petroſa*, or the ſcaly bones.

The fifth and fixth bone of the skull are the two *Oſſa petroſa* ſtony or ſcaly bones, which

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are next to the former in ſtrength. They are bounded with the falſe or baſtard Suture, and with part of the *Lambdoides*, and wedgbone.

The ſeventh is the *Os ſphenoides*, *baſilare*, or *Cuneiforme*, that is, the wedgbone. It is called *Baſilare*, becauſe it is (as it were) the baſis of the head. To this the reſt of the bones of the head are fitly faſtned in their places. This bone is bounded on each ſide with the bones of the forehead, the ſtony bones, and bones of the Nowl and Palat. The figure repreſents a Bat, and its proceſſes her wings. *Os ſphenoides*, or the wedg-bone.

There is beſides theſe another bone at the baſis of the forehead bone, into which the mamillary proceſſes end, the Greeks call it ἠθμοειδὲς, the Latins *Cribroſum* and *Spongioſum*, the ſpongy bone, becauſe it hath many holes in it not perforated in a direct paſſage, as in a ſive, but winding and anfractuous, that the air ſhould not by the force of attraction, preſently leap or aſcend into the brain, and affect it with its qualities, before it be elaborated by its lingring in the way. There are beſides alſo, ſix other little bones lying hid in the ſtony bones at the hole or auditory paſſage; on each ſide three, that is to ſay, the *Incus* or Anvill, the *Malleolus* or Hammer, and the *Stapes* or ſtirrop, becauſe in their figure they repreſent theſe three things; the uſe of theſe we will declare hereafter. *Os Ethmoides*, or *cribroſum*. The three bones of the auditory paſſage.

But alſo in ſome skuls there are found ſome diviſions of bones, as it were collected fragments, to the bigneſs almoſt of ones thumb, furniſhed and diſtinguiſhed by their proper commiſſures, or ſutures, which thing is very fit to be known to a Chirurgeon in the uſe of a Trepan.

Verily he may give a conjecture hereof, whilſt he ſeparates the *pericranium* from the skul, for the *pericranium* is with greater difficulty pluckt away from the ſutures, becauſe the *Craſſa meninx* hath ſtraiter connexion therewith by his nervous fibers ſent forth in ſuch places. The skuls in women are ſofter and thinner than in men, and in children more than in women, and in young men more then in men of a middle age. Alſo the Æthiopians or Black-moors, as alſo all the people inhabiting to the South, have their ſkuls more hard and compoſed with fewer ſutures. By what means a Chirurgeon may conjecture that there are extraordinary Sutures in certain places of the skull. The skuls of ſuch as inhabit the Southern countreys, are more hard and denſe.

Therefore as it is written by *Hippocrates*, ſuch as have their Skuls the ſofter, the ſymptomes in fractures are more dangerous and to be feared in them. But the Skull by how much the ſofter it is, by ſo much it more eaſily and readily yeelds to the perforating Trepan. Moreover in ſome skuls, there be bunches ſtanding out beſides nature, made either round or cornered, which the Chirurgeon muſt obſerve for two cauſes; the firſt is for the better conſideration of a blow or fracture. For in theſe bunches or knots, the ſolution of the continuity cannot be, if it ſeem to be ſtretched in length, but that the wound muſt penetrate to the inner parts. For in a round body there can be no long wound, but it muſt be deep, by the weapon forced the deeper, becauſe as a round body touches a plain but only *in puncto* in a prick or point: ſo whatſoever fals only lightly or ſuperficially upon it, only touches a point thereof. But on the contrary, a long wound muſt be upon a plain ſurface, which may be but only ſuperficiall. We muſt obſerve the extuberancies beſides nature, which are in ſome skuls.

Another cauſe is, becauſe ſuch bunches change the figure and ſite of the Sutures. And the Chirurgeon muſt note that the skull hath two tables, in the midſt whereof the *Diploe* is; which is a ſpongy ſubſtance into which many veins and arteries, and a certain fleſhineſs are inſerted, that the skull ſhould not be ſo heavie, and that it might have within it ſelf proviſion for the life thereof; and laſtly that there might be freer paſſage out for the fuliginous vapors of the brain. The ſite and ſubſtance of the *Diploe*.

The upper table is thicker, denſer, ſtronger and ſmoother than the lower. For this as it is the ſlenderer, ſo it is the more unequal, that it may give place to the internall veins and arteries, (which make a manifeſt impreſſion into the ſecond table on the inſide thereof) from which branches enter into the skull by the holes which contain the eys. Which thing faſtens the *Craſſa meninx* to the skull, and is therefore very worthy to be obſerved.

For in great contuſions when no fracture or fiſſure appears in the skull by reaſon of the great concuſſion or ſhaking of the brain, theſe veſſels are often broken, whence happens a flux of blood between the skull and membranes, and laſtly death. But it is fit the Chirurgeon take good heed to the tender and ſoft ſubſtance of the *Diploe*, that when he comes to it, having paſſed the firſt table, he may carefully uſe his Trepan, leſt by leaning too hard, it run in too violently, and hurt the membranes lying underneath it, whence convulſion and death would follow. To which danger I have found a remedy, by the happy invention of a Trepan, as I wil hereafter more at large declare in handling the wounds of the head. There may be a deadly rupture of the veſſels of the brain without any fracture of the skull. Caution to be had in the uſe of the Trepan.

CHAP.

## CHAP. V.

### *Of the Meninges, that is, the two membranes called* Dura Mater *and* Pia Mater.

Why the bone *Ethmoides* is perforated.

THe *Craſſa meninx* is one of the firſt and principall membranes of the body; it goes forth by the ſutures and the holes of the nerves that proceed out of the skull; and it paſſes forth by the bone *Ethmoides* perforated for that purpoſe, to carry ſmels to the brain, and purge it of excrementitious humors. This ſame *Craſſa meninx* inveſts the inner coat of the Noſe; alſo it paſſes forth of the great hole through which the ſpinall marrow paſſes, veſted with this *Craſſa meninx*, with all the nerves and membranes. For which cauſe if any membrane in the whole body be hurt, by reaſon of that continuation which it hath with the *Meninges*, it ſtraight communicates the hurt to the head by conſent.

The conſiſtence of the *Craſſa meninx*.

The *Craſſa meninx* is thicker and harder than all other membranes in the body; whereupon it hath got the name of the *Dura mater*, beſides alſo it begirts, produces, and defends the other membranes.

The uſe.

The uſe of it is to involve all the brain, and to keep it when it is dilated, that it be not hurt by the hardneſs of the skull. For the courſe of nature is ſuch, that it always places ſome third thing of a middle nature, betwixt two contraries. Alſo the *Craſſa meninx* yeelds another commodity, which is, that it carries the veins and arteries entring the skull for a long ſpace. For they inſinuate themſelves into that part, where the duplicated or folded *Meninges* ſeparate the brain from the *Cerebellum*, and ſo from thence they are led by the ſides of the *Cerebellum*, untill they come (as it were) to the top thereof; where being united, they inſinuate themſelves into that other part of the *Craſſa meninx*, where in like manner being duplicated and doubled, it parts the brain at the top into the right and left. Theſe united veins run in a direct paſſage even to the forehead, after the manner of the Sagittall ſuture; They have called this paſſage of the mutually infolded veins, the *Torcular* or Preſs, becauſe the blood which nouriſhes the brain is preſſed and drops from thence by the infinite mouths of theſe ſmall veins. Therefore alſo here is another uſe of the *Craſſa meninx*, to diſtinguiſh the brain by its duplication, being it thruſts it ſelf deep into its body, into two parts, the fore and hind, and preſently to ſeparate the ſame into the right and left; that one part being hurt, the other may remain ſafe and ſound, performing it sduty to the creature, as we ſee in ſome that have the Palſey. *Columbus* obſerved that this *Meninx* was double, and verily I have found it true by my own ſight.

What the *Torcular* is.

One part of the brain being hurt the other keeps the creature alive.

The conſiſtence of the *Pia mater*.

The other *Meninx* or membrane of the brain, called *Pia mater*, is moſt ſlender interchaſed with divers veins and arteries, for its own and the brains nouriſhment and life. This doth not only involve the brain, as the *Craſſa meninx* doth, but alſo more deeply penetrates into the anfractuous paſſages thereof, that it may every where joyn and bind it to it ſelf, not eaſily to be drawn from thence, by many ſmall fibers whereby it deſcends even to the cavities of the ventricles thereof. Wherefore you muſt ſee it abſolutely in the ſite as we have mentioned, and not pluck it away unleſs with the ſubſtance of the Brain.

The ſenſe of the *Meninges*.

Theſe membranes when they are hurt or afflicted, cauſe grievous and moſt bitter torment and pain; wherefore I dare ſay, that theſe membranes are rather the authors of ſenſe, than the brain it ſelf, becauſe in diſeaſes of the Brain, as in the Lethargy, the party affected is troubled with little or no ſenſe of pain.

## CHAP. VI.

### *Of the Brain.*

What the brain is.

NOw followeth the Brain, the beginning of the nerves and voluntary motion, the inſtrument of the firſt and principall faculty of the Soul, that is, the Animall and Rationall. Man hath this part in greater plenty then any other Creature, for it almoſt fils the whole skull. But if it ſhould have filled it all, the Brain could not be moved, that is, dilated and contracted in the skull. It

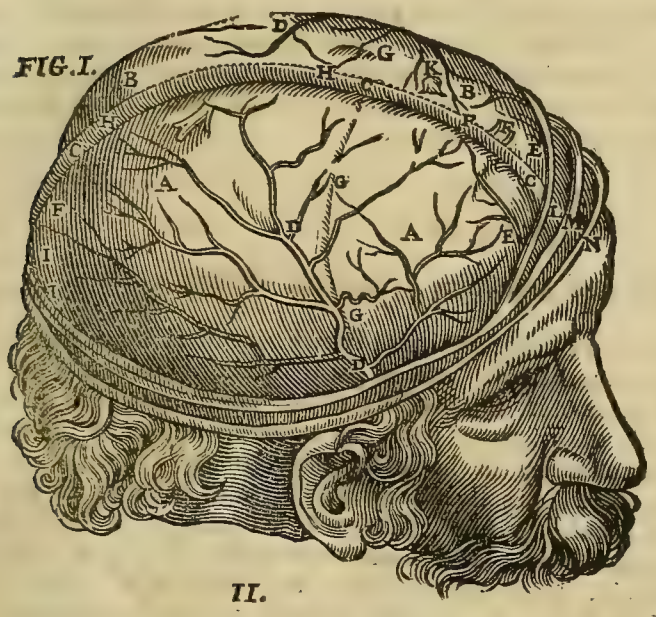
The quantity.

Temper.

is of a cold and moiſt Temperature. The laudable temper of the Brain is known by the integrity and perfection of the internall and externall ſenſes, the indifferency of ſleep and waking, the maturity or ripeneſs of judgment, and conſtancy of opinions, from which, unleſs it meet with better and more probable, it is not eaſie to be moved.

*The first figure of the Head, as it appears when the skull is taken away.*
*The second figure shewing the Brain, the skull and* Dura mater *being taken off.*

FIG. I.



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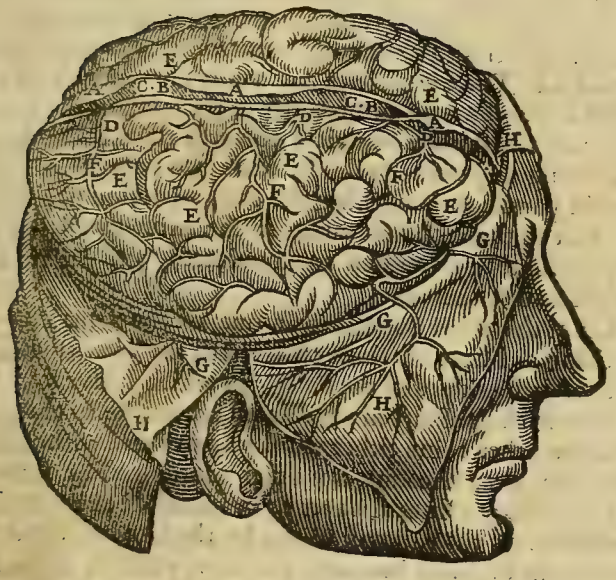


*AA, BB.* The *Dura meninx* or thick membrane.
*CCC.* The third *Sinus* of this membrane.
*DD.* The course of the veins as they run through the membrane or the second vein of the brain.
*EE.* The first vein of the brain.
*FFF.* Certain small veins which perforate the skull and reach to the *pericranium* or skull-skin.
*GGG.* Fibers of the *Dura meninx* passing through the Coronall Suture, which fibers make the *Pericranium.*
*HH.* fibers passing through the sagittall Suture.
*II.* Others passing through the Lambdall Suture.
*K.* A knub which useth to grow to the *Sinus* of the Skull.
*L.* A cavity in the fore-head bone.
*M.* The skull.
*N.* The *Pericranium* or skull-skin.

*Fig.* 2.

*AAA.* A part of the *Crasse meninx* dividing the brain. *BB.* the third *Sinus* of the same *Crasse* membrane opened.
*CC.* the beginning of the vessels out of the third *Sinus* into the *Pia mater.*
*DDD.* the propagation or branches of these vessels. *EEE.* the *Pia mater* or thin *meninx* immediately compassing the brain. *FFF.* Certain vessels running through the convolutions or branches of the brain. *GGG.* Certain branches of veins running through the sides of the *dura meninx. HHH.* The thick membrane reflected downward.

You shall know the brain is more hot, by the quickness of the senses and motions of the body, by shortness of sleep, the suddain conceiving of opinions and change of them, by the slippery and failing memory, and lastly, by easily receiving hurt from hot things, as the Sun and Fire. Such as have a cold brain, are slow to learning, and to conceive other things, but they do not easily put away their once conceived opinions. They have slow motion to action, and are sleepy. Those who have a dry brain, are also slow to learn; for you shall not easily imprint any thing in dry bodies, but they are most constant retainers of those things they have once learned; also the motions of their bodies are quick and nimble. Those who have a moist brain do easily learn, but have an il memory, for with like facility as they admit the speices of things and imprint them in their minds, do they suffer them to slide and slip out of it again. So clay doth easily admit what Character or impression soever you will, but the parts of this clay which easily gave way to this impression, going together again, mixes, obliterates and confounds the same. Therefore the senses proceeding from a cold brain are dull, the motions slow, the sleep profound.

The action of the brain is to elaborate the Animall Spirit and necessary sense serving the whole body, and to subject it self as an instrument to the principall faculties, as to reason. The brain is twofold, the fore and hind. The hind by reason of its smallness is

The Action.

Number.

called the *Cerebellum*, (the little or After-brain). But the fore by reaſon of its magnitude hath retained the abſolute name of the brain. Again this fore-brain is twofold, the right and left, parted by that depreſſion, which we formerly mentioned, of the *Meninges* into the body of the brain. But this diviſion is not to be here ſo abſolutely taken, as though the Brain were exactly divided and ſeparated into ſo many parts, but in the ſenſe as we ſay the Liver and Lungs are divided a pretty way, whereas at their Baſis they have one continued body. The outward ſurface of the Brain is ſoft, but the inward hard, callous & very ſmooth; when on the contrary, the outward appears indented and unequall with many windings, and creſted as it were with many wormlike foldings.

## CHAP. VII.

### *Of the Ventricles and Mamillary proceſſes of the Brain.*

The ſubſtance of the brain is porous and ſweats forth blood.

FOr the eaſie demonſtration of the ventricles of the brain, it is convenient you cut away a large portion thereof, and in your cutting obſerve the blood ſweating out of the pores of it. But beſides, it is fit you conſider the ſpongy ſubſtance by which the excrements of the brain are heaped up, to be preſently ſtrained out, and ſent away by the hollow paſſage. In the ſubſtance of the brain you muſt obſerve four ventricles, mutually conjoyned by certain paſſages, by which the ſpirits endued with the *ſpecies* of things ſenſible may go from one into another. The firſt and two greater, one on each ſide are placed in the upper brain. The third is under them in the middle part of the brain. The fourth and laſt at the fore ſide of the *Cerebellum*, towards the beginning of the ſpinall marrow. The two formoſt are extended the length way of the brain in the form of a ſemicircle, whoſe horns look or bend outwards. They are ſpacious and large, becauſe it was meet the Spirits contained there together with their excrements, ſhould be there purified and clenſed; but in other ventricles, the pure and already elaborate ſpirits are only received. Theſe ventricles are white and ſmooth in their inner ſuperficies; but that on each ſide they have an extuberancy at the midſt of the ſemicircle, ſituate at the baſis of the Pillar of the middle ventricle towards the noſe under the *Septum lucidum* or cleer partition, ſevering or parting in ſunder theſe two ventricles.

The four ventricles thereof.

The magnitude of the upper ventricles of the brain.

The *Septum Lucidum*.

This *Septum lucidum*, or cleer or thin partition, is nothing elſe than a portion of the brain indifferently ſolid, but very clear, that ſo through this partition the animall ſpirits contained in theſe two ventricles may mutually paſs and be communicaced, and yet no other groſſer ſubſtance may pierce the thin denſity thereof.

Why the Palſy of one ſide is not preſently communicated to the other.

Wherefore it is not to be feared, that the water contained in one of the ventricles may paſs to the other through this partition, as I have oft times obſerved to the great admiration of the ſpectators in the dead bodies of ſuch as dyed of the Palſy, in which I have found the ventricle of that ſide which was taken with the Palſy much dilated, according to the quantity of the water contained therein, the other being either wholly empty and without any; or certainly no fuller than in any other, dead through any other occaſion. For ſome affirm that there is a certain kind of wateriſh moiſture alwayes to be found in the ventricles, which may be made by the condenſation of the Animall ſpirits by the force of the deadly cold. But theſe two firſt ventricles of the brain go into one common paſſage, as both the bellows of a fornace, whereby the ſpirit inſtructed with the ſpecies of things goes into the under, or middle ventricle from the former. In theſe ſame firſt ventricles the *Plexus Choroides* is to be conſidered, and in like manner the paſſage by which the groſſer excrements are driven or ſent into the pituitary Glandule.

*The third Figure repreſents the* Cerebellum *with the wormy proceſſes ſeparated from it.*

*AB.* The right and left part of the After-brain.
*CD.* The *anterior* and *poſterior* regions of the middle part of the After-brain.
*E.* The *anterior* wormy proceſſe.
*F.* The *poſterior* wormy proceſs.
*GG.* In this place the After-brain did grow to the ſpinall marrow.
*H.* The cavity in the ſpinall marrow maketh the foruth ventricle. *IK.* The *anterior* and *poſterior* proceſſes of the brain, called *vermi-formes* or the wormy proceſſes.

For

This *Plexus Choroides* is nothing elſe, but a production of the *Pia mater* diverſly folded with the mutuall implication of veins and arteries woven in the form of a net. Theſe veſſels are of magnitude and capacity ſufficient, both to yeild life and nouriſhment to that particle to which they are faſtened, as alſo for the generation of the Animall ſpirits, as which take fit matter from the veins ſtretched forth into the ſame *Plexus*, the hind artery and vein *Torcular*; and alſo from the air entring into the brain by the mamillary proceſſes. But the mamillary proceſſes are certain common wayes for conveyance of the air and ſmells into the brain, and carrying of excrements from the brain.

The *Plexus Choroides*.

The *Proceſſus Mamillares*.

For thus in them who have the Catarrhe and *Coriza* or poſe, neither the air, nor ſmels can penetrate into the brain; whence frequent ſneeſings enſue, the brain ſtrongly moving it ſelf to the expulſion of that which is troubleſome to it. But of the excrements of the brain, whether bred there, or proceeding from ſome other part, ſome are of a fumid and vaporous nature, which breath inſenſibly through the Sutures of the skull; Others are groſs and viſcid, of which a great part is expelled by both theſe productions, or through each of them. For thus in the Poſe you may ſee ſome who have one of their noſtrils ſtopt, the other running, and ſome who have both obſtructed. The moſt proper benefit of the two firſt ventricles of the brain is to entertain the Phantaſie as in a convenient ſeat and habitation, ſeeing the mind there eſtimates and diſpoſes in order the ſpecies of things brought in from the externall ſenſes, that ſo it may receive a true judgment of them from reaſon which rsſides in the middle ventricle.

The uſe of the upper ventricles of the Brain.

The third ventricle is ſeated between the hindermoſt extremities of the former ventricles, and the laſt ventricle of the *Cerebellum*. In this ſix parts preſent themſelves to our conſideration, that is, the *Pſalloides* or Arch, the *Conarium*, or pine Glandule, the Buttocks, wormlike productions, the Baſon and paſſage which is from this middle into the laſt & hindmoſt ventricle. The *Pſalloides* or Arch is nothing elſe, but the cover of the middle ventricle, reſembling a roof borne up with three ſtayes or pillars, the one whereof is extended to the noſe under the *Septum lucidum*, the two other on each ſide one, look towards the back part of the brain. This is the reaſon of this figure which is outwardly convexe and inwardly concave, to wit, that there might be free ſpace for that motion which the Animall ſpirit inwardly produces, and beſides that it might more eaſily ſuſtain the burden of the brain lying upon it. For an arched figure is the moſt convenient of all other to ſuſtain a weight.

The ſeat of the third ventricle of the brain. The parts to be conſidered in it.

What the *Fornix* or Arch is, and the uſe thereof.

The *Conarium* or Pine glandule, is a ſmall Glandule of the ſame ſubſtance with the brain, round and ſomewhat long, like a Pine Apple, from whence it hath the name; this Glandule is ſeated over againſt a ſmall hole which deſcends to the loweſt ventricle. It hath this uſe, to ſtrengthen the diviſion of the veſſels led thither with the production of the *Pia mater* for the generation of the Animall ſpirits, and the life and nouriſhment of the brain.

What the *Conarium* or pine Glandule is.

The *Nates* or Buttocks are ſubjected or placed under this Glandule, that is, bodies of a ſolid and white ſubſtance drawn out in length like a childs buttocks, eſpecially in beaſts, and chiefly in a ſheep. Theſe buttocks have ſuch a ſolid ſubſtance, that ſo they may keep open and free the paſſage, or channell that runs down from the middle to the lower ventricle, by means of which the Brain participates with the *Cerebellum*.

What the *Nates* or Buttocks are.

The worm is a production of the *Cerebellum* or After-brain, to wit, a portion of the ſame being in the top or beginning and as it were in the entrance thereof, being like many little circles or wheels mutually knit together by ſlender membranes; and it is ſo called becauſe it reſembles thoſe thick white worms which are found in rotten wood. It doth as it were perform the office of a porter to the formerly mentioned paſſage, that it may give way and entrance into the *Cerebellum*, to a neceſſary quantity of ſpirits, when need requires; leſt that, if they ſhould ruſh with a ſodain violence into the *Cerebellum*, they might confound the imprinted notions of things to be remembred.

What the worm is.

The *Pelvis* or Baſon is a paſſage appointed for the carrying away of the groſs excrements by the palate, and is ſo called becauſe it hath the ſimilitude and uſe of a Baſon or Tunnell: it deſcends from the third ventricle into the Glandule which is ſeated between the proceſſes of the wedg-bone called the ſaddle thereof, as you may perceive by putting in a ſpathern. Now there remains the laſt of the ſix parts propoſed to our conſideration in the third ventricle, that is, the Channell or paſſage running from this third ventricle into the fourth, for the uſe formerly mentioned.

Here the *Pelvis* or Baſon is confounded with the Tunnell.

This Channell deſcending in its originall from the Baſon, goes from thence under the buttocks into the laſt ventricle, the *Meninges* being perforated; which that you may ſhew, it is fit you put the end of a ſpathern through it. The benefit of a third ventricle is, that it may be as a Tribunall or Judgment-ſeat, to the Reaſoning faculty, when the mind will draw concluſions from things ſeen.

The Channell from the third into the fourth ventricle.

*The fourth and Fifth figure of the Brain.*

FIG. V.

VI

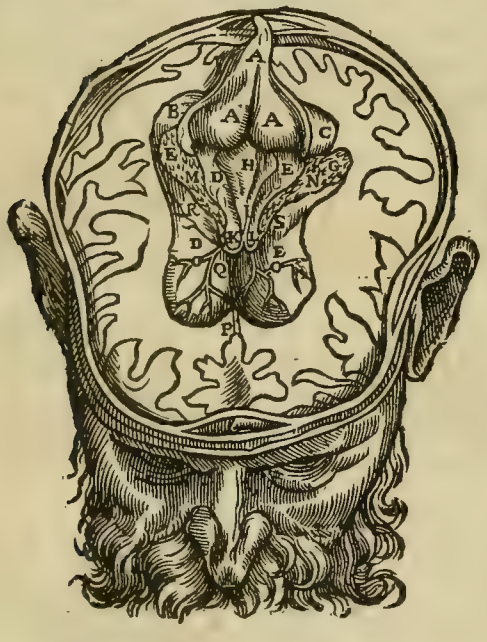


*Figure* 5.

*RRR.* The lower *superficies* of the callous body reflected.

*SIV.* The *triangular* surface of the *Fornix* or Arch.

*XX.* The lower part of the partition of the ventricles continuated with the Arch.

*YY.* The upper part of the partition continued with the callous body.

*Figure* 6.

*AAA.* The lower surface of the Arch.

*BC.* Two corners of the Arch, by which it is continuated with the ventricles.

*DE.* The right and left ventricles.

*FG.* Arteries climbing up from the sleepy arteries through the lower side of the ventricles for the forming of that complication of vessels which is called *Plexus choroides.*

*H.* A vessell issuing out of the fourth *Sinus* under the Arch, and passing into the third ventricle.

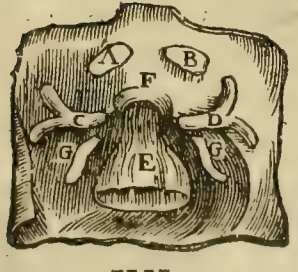
*IKL.* The division of this vessell, a part whereof goeth to the right ventricle at *K.* and another to the left at *L.*

*MN.* The *Plexus choroides* made of the artery *FG.* and the vessel *H.*

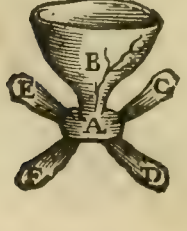
*OO.* Small veins passing through the ventricles of the brain, produced from the vessels *K.* and *L.* *P.* Other veins arising from the same, dispersed without the ventricles into the *Pia mater.* ♌. A passage from the third ventricle unto the *Bason* or *Tunnell.* *RS.* Canales or *Sinus* graven or furrowed in the substance of the ventricles; in which the phlegm is led along to the orifice of the foresaid passage marked with ♌.

*The Sixth figure of the Brain.*

XI.



XII.



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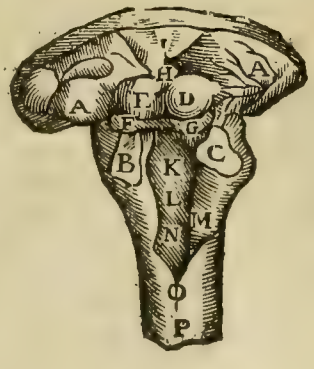


*Figure* 10.

*AA.* Parts of the spinal marrow cut from the Brain.

*BC.* The places where this marrow did grow unto the brain.

*DE.* The Testicles. *FG.* The buttocks. *H.* the Pine-Glandule.

From *I* to *K.* a part of the third ventricle going to the fourth, under the Testicles.

*KLMN.* A part of the fourth ventricle which is engraven in the marrow. *O.* The top of the fourth ventricle. *P.* The place where the spinall marrow goeth out of the skull. *Figure* 11. *AB.* Parts of the optick nerves. *CD.* The sleepy arteries. *E.* The Bason or Tunnell hanging down. *F.* A hole or perforation of the *dura meninx*, through which the Tunnel reacheth unto the Glandule. *GG.* Parts of the second conjugation of sinews. *Figure* 12. *A.* The Glandule. *B.* The Bason or Tunnell called *Pelvis* or *Infundibulum.* *CDEF.* The four holes through which the phlegmatick excrement issueth.

The

The fourth ventricle is ſeated in the place we formerly mentioned; it is leſs than the reſt, but more ſolid; leſs as that which was not to receive the ſpirit before it was purified, and cleanſed from all impurities; but more ſolid, that it might contain it the ſafer. The uſe thereof is, to be as a treaſury and ſtore-houſe of the opinion, and judgments which reaſon ſhall decree, that when need requires, we may fetch and draw them from thence as laid up in ſtore. I know *Galen* and the Greek Phyſitians have not ſo diſtinguiſhed in places the three fore-mentioned faculties; but have written that they all are all over confuſed through the whole ſubſtance of the brain, which opinion alſo *Fernelius* in his *Pathologia* hath renewed. Yet I had rather follow this opinion, as commonly received and celebrated by the *Arabian* Phyſitians. The fourth ventricle of the brain.

The Mamillary proceſſes are the inſtruments and paſſages of ſmelling being of the ſame ſubſtance with the brain, and like nerves, which run out from the hind horns of the upper or foremoſt ventricles of the brain to the *Ethmoides* and ſpongy bones of the noſe, that hence they may receive the divers kinds of ſmells, and carry them into the Brain. But although they be like nerves, yet they are not accounted nerves becauſe they go not out of the skul. The uſe of the Mamillary proceſſes.

## CHAP. VIII.

*Of the ſeven conjugations of the Nerves of the Brain, ſo called, becauſe they always ſhew the Nerves conjugated and doubled, that is, on each ſide one.*

THe nerves are the wayes and inſtruments of the Animall ſpirit and faculty, as of which thoſe ſpirits are vehicles, as long as they are contained in the brain; they conſiſt of the only and ſimple marrowey ſubſtance of the brain, or ſpinall marrow. But paſſing forth of the brain, they have another membranous ſubſtance which involves them joyned with them from the two membranes of the brain; and according to the opinion of ſome Anatomiſts, they have alſo a third from the ligaments drawn as well from divers others, as from theſe by which they are tyed to the *Vertebra's*; Yet this opinion ſeems abſurd to me, ſeeing ſuch a membrane, as that which is inſenſible, wholly repugnes the condition of a nerve, which is to give ſenſe to the parts to which it is inſerted. What a Nerve or Sinew is. Its ſubſtance. Whether the nerve have a third membrane from the Ligaments of the *Vertebra's*.

The magnitude of the nerves is different, according to the divers neceſſity of ſenſe incident to the parts into which they are inſerted. Their figure is round, and long, like to a conduit pipe to carry water in; the membranes of the brain, with which the nerves are covered, being dilated and ſtretched over them, after the ſame manner that the proceſſes of the *Peritonæum* involves the ſpermatick veſſels, with which they go down to the Teſticles, and take life and nouriſhment by the capillary veins and arteries, which deſcend to them with the membranes. They are made for this uſe, that they may impart ſenſe to the ſenſitive parts, and motion to theſe that are fit to be moved. All the nerves deſcend from the brain either mediately or immediately; their Number is ſeven and thirty pair, or conjugations, whereof ſeven have their originall immediately from the brain, the other thirty from the ſpinall marrow. Their magnitude. Their figure. Their uſe. Their number.

The firſt conjugation of the nerves of the brain is thicker than all the reſt, and goes to the eyes, to carry the viſive ſpirit to them. Theſe ariſing from divers parts of the brain, in the middle way before they go out of the skull meet together croſwiſe like the Iron of a Mill (which is faſtened in the upper ſtone) going into one common paſſage with their cavities not viſible to the eye; that ſo the ſpirits brought by thoſe two nerves may be communicated, and they are mutually joyned and meet together ſo, that being driven back from one eye they may flie back into the other. An argument whereof may be drawn from ſuch as aim at any thing, who ſhutting one of their eyes ſee more accurately; becauſe the force of the neighbouring ſpirits united into one eye, is more ſtrong than when it is diſperſed into both. This conjugation when it comes into the glaſſie humor, is ſpent in the ſtructure of the net-like coat which contains this humor on the back part. The firſt conjugation of nerves.

The ſecond conjugation goes into many parts, at its paſſing forth of the skull; and in the bottom of the circle of the eye it is diſtributed into the ſeven muſcles moving the eyes. The ſecond conjugation.

The third is twofold, in the paſſage out of the skull it is likewiſe divided into many branches, of which ſome are carryed to the temporall muſcles, into the *Maſſeteres* or grinding muſcles into the skin of the face, forehead and noſe; Otherſome are ſent into the upper part of the cheek, and the parts belonging to it, as into the teeth, gums and the muſcles of the upper lip; and thoſe which are called the round which incompaſs the mouth on the inſide; the laſt are waſted in the coat of the tongue, to beſtow upon it the ſenſe of taſting. The third conjugation.

The fourth conjugation is much ſmaller, and is almoſt wholly waſted upon the coat of the Palat of the mouth, to endue it alſo with the ſenſe of taſting. The fourth conjugation.

The fift at its originall and having not as yet paſſed forth of the skul, is divided into two, The fift conjugation.

and ſends, the greater portion thereof to the hole of the ear, or paſſage of hearing, that it may ſupport the auditory faculty; and it ſends forth the other leſſer portion thereof to the temporall muſcles by the paſſage next to it; by which the ſecond conjugation paſſes forth.

The ſixt conjugation.

The ſixt being the greateſt next to the firſt, paſſing entire forth of the skull, imparts ſome ſmall branches to certain muſcles of the neck and throttle, and then deſcending into the cheſt, it makes the recurrent nerves, and diſperſed over all the parts of the two lower bellies, it paſſes even to the bladder and teſticles, as we ſhewed in the former book.

The ſeventh conjugation.

The ſeventh is inſerted and ſpent upon the muſcles of the bone *Hyois*, the tongue, and ſome of the throttle, to give them motion; it paſſes forth of the skull by the hole of the nowl bone at the extuberancies thereof.

*The ſeventh figure ſhewing the eighth conjugation of the Nerves of the Brain.*

FIG. I.

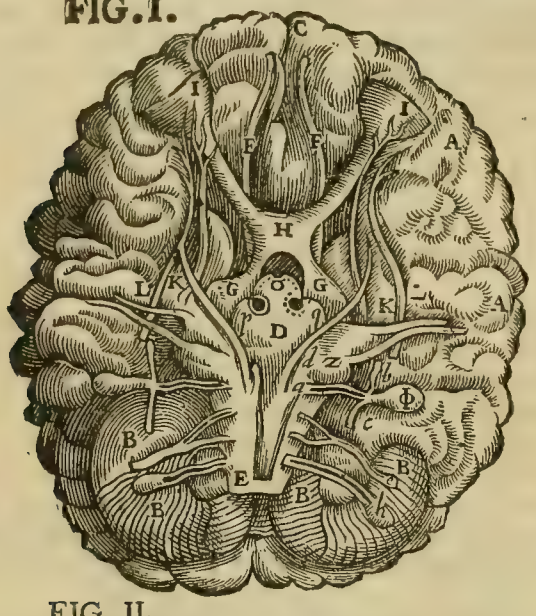


FIG. II.

*AA*, 2. The brain.

*BB* 1, 2. the After-brain. *CC* 1, 2. the ſmelling of the brain. which ſome call the mamillary proceſſes.

*D* 1, the beginning of the ſpinall marrow out of the Baſis of the brain.

*F* 1, 2. a part of the ſpinall marrow when it is ready to iſſue out of the skull.

*FF* 1, 2. the mamillary proceſſes which ſerve for the ſenſe of ſmelling.

*GG* 1, 2. the optick nerves.

*H* 1. the coition or union of the optick nerves.

*II* 1, 2. the coat of the eye whereinto the optick nerves are extended.

*KK* 1, 2. the ſecond pair of the ſinews ordained for the motion of the eyes.

*LL* 1, 2. the third pair of ſinews, or according to the moſt Anatomiſts, the leſſer root of the third pair.

*MM* 1, 2. the fourth pair of ſinews or the greater root of the third pair.

*N* 2. a branch of the third conjugation derived to the muſculous skin of the forehead.

*O* 2. a branch of the ſame to the upper jaw.

*PP* 2. another into the coat of the noſtrils.

*Q* 2. another into the temporall muſcles. *R* 2, a branch of the fourth conjugation crumpled like the tendrill of a vein. *S* 2. a branch of the ſame reaching unto the upper teeth, and the gums. *T* 2. another of the ſame to the lower jaw. *V* 2. a Surcle of the branch *T*, to the lower lip.

*XX* 2. another ſurcle from the branch T, to the roots of the lower teeth.

*YY* 2. the aſſumption of the nerves of the fourth conjugation unto the coat of the tongue. *Z* 1, 2. the fourth pair are vulgarly ſo called which are ſpent into the coats of the palat. *a* 1, 2. the fifth pair of ſinews which belong to the hearing φ, the *Auditory* nerve ſpred abroad into the cavity of the ſtony bone. *, a hard part of the fift conjugation above, the * which may be counted for a diſtinct nerve. *b* 1, 2. a ſmall branch derived from this harder part of the firſt pair. *c*. 1, 2. a lower branch from the ſame originall. *d* 1, 2. this nerve is commonly aſcribed to the fift pair, but indeed is a diſtinct conjugation which we will cal the Eighth, becauſe we would not interrupt the order of other mens accounts. *e* 1, 2. the ſixt pair of ſinews. *f* 2. a branch from them derived to the neck and the muſcles couched thereupon. *g* 2. another branch to the muſcles of the Larinx or throttle. *h* 1, 2. the ſeventh pair of ſinews. *i* 1. the union of the ſeventh pair with the ſixt. *l* 2. a propagation of the ſeventh pair to thoſe muſcles which ariſe from the Appendix called *Styloides*. *m* 2. Surcles from the ſeventh conjugation to the muſcles of the tongue, the bone *Hyois* and the Larinx. *o*ſp *q* 1. three holes; through the hole *o* the phlegm iſſueth out of the third ventricle of the brain to the Tunnell, and at *pq*. is the paſſage of the *Soporary* arteries to the ventricles of the Brain.

CHAP.

## CHAP. IX.

*Of the* Rete Mirabile, *or wonderfull Net, and of the Wedg-bone.*

THE Animall ſpirit is made of the vitall, ſent from the heart by the internall ſleepy Arteries to the brain. For it was requiſite that it ſhould be the more elaborate, becauſe the action of the Animall is more excellent than that of the vitall; nature hath framed a texture of Arteries in many places running croſs one another, in the form of a Net divers times doubled; (whereupon it had the name of the wonderfull Net) that ſo the ſpirit by longer delay in theſe Labyrinthian or maze-like turnings, might be perfectly concocted and elaborate, and attain to a greater fitneſs to perform the Animall functions.

The exiſtence of the Animall ſpirit.

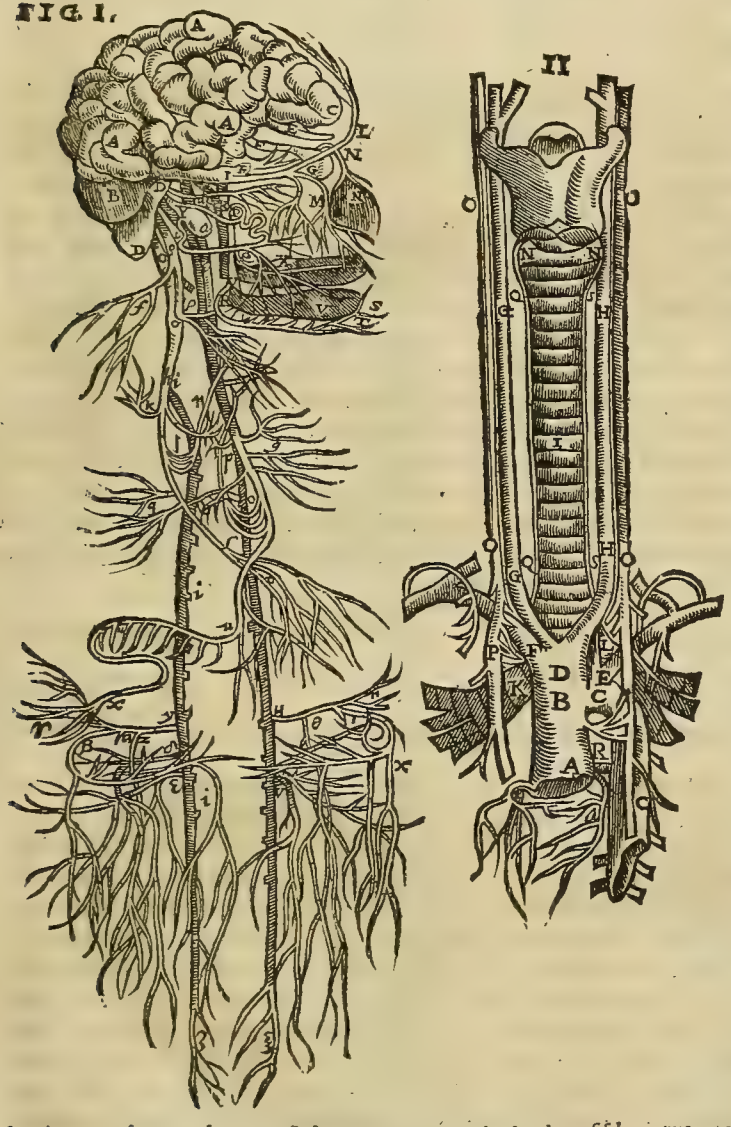
What the *Rete Mirabile* is.

This wonderfull Net ſituate at the ſides of the *Apophyſes clinoides* or productions of the wedg-bone, is twofold; that is, divided by the pituitary Glandule which is ſituate between the ſaid *Apophyſes Clinoides*, having the wedgbone lying under them, next to the *Craſſa Meninx*, being perforated on the right and left ſide, next to which lye bones as rare as a ſponge even to the Palat, by which the Phlegme is purged by the mouth and noſe; and therehence, I think, that ſpattle flows, which ſuch as have a moiſt brain, continually ſpit out of their mouth.

The ſite and number.

*The Eight Figure of the brain.*

FIG. I.



*A*, The brain.
*B*, the *Cerebellum* or after-brain.
*C*, a proceſs of the brain, but not that which is called *Mamillaris*.
*DD*. The marrow of the back as it is yet within the skull.
*E*, the *Mamillary* proceſs or inſtrument of ſmelling.
*F*, the optick nerve.
*G*, the coat of the eye into which the optick nerve is ſpread.
*H*, the nerve that moveth the eye or the ſecond pair.
*I*, the third conjugation, or the harder and leſſer branch of the nerves of the third conjugation brought forward.
*K*, the fourth conjugation or the greater and thicker nerve of the third pair bending downward.
*L*, a branch of the nerve marked with *I*, which goeth to the fore-head.
*M*, another branch of the nerve *I*, reaching to the upper jaw. *NN*, a nerve proceeding from the branch *I*, inrexed or woven with the coat of the noſe. *O*, the nerve of the temporall muſcle iſſuing from the branch *I*. *P*, a nerve contorted of the nerves *K* and *b*. *Q*, a nerve proceeding from the branch *K*, to the ſockets of the upper teeth.
*R*, a nerve creeping from the nerve *K* to the lower jaw. *S*, a ſurcle of the branch *R*, offered to the lower lip. *TT*, other ſurcles from the branch *R*, attaining to the lower teeth. *VV*, a branch of the nerve *K*, diffuſed into the coat of the tongue. *XX*, the fourth pair of ſinews which go into the coat of the palat. *Y*, the fifth pair of ſinews which are the nerves of hearing. *a*, the membrane of the ear, unto which that fifth nerve goeth. *bc*, two ſmall branches of the fifth conjugation uniting themſelves with the nerve *P*. *d*, the eight conjugation or a nerve of the fifth pair attaining unto the face. *ee*, the ſixt pair of nerves. *f*, a branch from the nerve *e*, reaching to the muſcles of the neck. *g*, ſmall branches derived unto the throttle or *larinx*. *h*, the bifurcation of the nerve into two branches. *iii*, an inner branch hanging to the rackbones, and ſtrengthning the *intercoſtall* nerves, and is therefore called *Intercoſtalis*. *kk*. Surcles of the utter branch going to the heads of the muſcles, to the breaſt-bone and to the coller-bones. *lm*, branches of the right nerve *l*, making the right Recurrent nerve. *mn*, the inſertion of the recurrent ſinews into the muſcles of the *larinx*. *op*, branches of the left nerve making the left recurrent ſinew *p*. *qq*. branches from the ſixt conjugation going to the coat of the lungs. *r*, ſmall nerves of the heart and of the purſe thereof called the *Pericardium*, as alſo ſome approaching to the coats of the lungs. *ſ*, nerves on either ſide ſent to the ſtomach. *t*, the right ſtomach nerve going to the left orifice of the ſtomach. *uu*, the left ſtomach nerve going to the right orifice of the ſtomach. *x*, a nerve from the branch *u*, paſſing into the hollowneſs of the liver. *y*, the nerve belonging to the right ſide of the kell. *z*, the nerve belonging to the colick gut. *a*, a nerve creeping to the gut called *duodenum* and the

the beginning of the *jejunum* or empty gut. β, a nerve implanted in the right side of the bottom of the stomach. γ, a nerve belonging to the liver & bladder of gall. δ, a nerve reaching unto the right kidney. ε, a branch reaching the *Mesenterium* and the guts. ζ, a branch sprinkled to the right part of the bladder. η, a branch going through the left part of the kel. θι, furcles derived to the colick gut and the kel. κ, small branches inserted into the spleen λλ, a nerve approaching to the left side of the bottom of the stomach. μ, a branch belonging to the left side of the *Mesentery* and the guts. ν, a branch which attaineth to the left kidney. ξ, small nerves creeping through the left side of the bladder. ο, the seven pair of sinews. π, a branch derived from the sixt conjugation to the muscles which arise from the process called *Styloides*. ρ, a branch of the seventh conjugation which goeth to the muscles of the tongue, of the bone *hyois*, and of the throttle or *larinx*. ς, a conjunction or coition of the 6. and 7. pair into one Nerve.

What the *Apophyses Clinoides* are.

These *Apophyses clinoides* are certain productions of the *Os basilare* or wedg-bone, (called the Saddle thereof,) between which, as I said, the pituitary glandule lies with part of the wonderfull net. There is a great controversie amongst anatomists concerning this part; for *Vesalius* denies that it is in man, *Columbus* admits it, yet he seems to confound it with the *Plexus Choroides*. Truly I have observed it alwayes after the manner, as *Sylvius* alledges against *Vesalius*. It remains, that we recite the perforations of the skull, because the knowledg of these much conduces to the understanding of the insertions of the veins, arteries and nerves.

Whether the *Rete mirabil* differ from the *Plexus Choroides*.

## CHAP. X.

### *Of the holes of the inner Basis of the skull.*

IN the first place are reckoned the holes of the bone *Ethmoides*; then those of the optick nerves. Thirdly, of the nerves moving the eyes. Fourthly, of that portion, of the nerves of the fourth conjugation which go to the temporall muscles. Fiftly are reckoned, these holes scarce visible, situate under the pituitary glandule, by which the spettle is evacuated. Sixthly, that hole which is in the wedg-bone made for the entrance of the internall sleepy Arteries, composing the wonderfull Net, and then passing into the brain by a great slit. That perforation which we reckon in the seventh place is commonly double, made for the entrance of one of the branches of the internall Jugular vein. The eight hole is somewhat long, of an ovall figure, by which, part of the third conjugation and all the fourth conjugation passes forth. The ninth are the auditory passages. The tenth are very small holes, and give way to the vein and artery going to the auditory passage, above the *foramen cæcum*. In the eleventh place are reckoned the perforations which yeeld passage forth to the sixth pair of nerves, to part of the sleepy Arteries, and of the internall Jugular. In the twelfth those which yeeld a way out to the seventh conjugation. The great hole of the Nowl-bone through which the spinall marrow passes, is reckoned the thirteenth. The fourteenth is that, which most commonly is behind that great hole, by which the Cervicall veins and arteries enter in.

## CHAP. XI.

### *Of the perforations of the externall Basis of the Brain.*

THere is a hole on each side at the Eye-brows, by which passes a small nerve from the third conjugation coming out of the cavity of the Orb of the eye, and going by the forehead bone to the eye-brows, that it may give motion to the two muscles of the upper eye-brow and forehead. Yet oftentimes the hole is but to be seen on one side, oft times there is a cleft in stead thereof, otherwhiles it is not perforated nor cleft at all. The second, is the perforation of the greater corner of the ey, by which a portion of the nerves of the third conjugation descends to the coat of the nose; in this hole the *Glandula Lachrymalis* is seated. The third is seated under the eye, that it may give way to the other portion of the nerves of the third conjugation going to the partt of the face, and the teeth of the upper jaw. The fourth is at the beginning of the palat, amongst the cutting or shearing teeth, through which a vein, an artery and the coat of the palat passes out. In the fifth order are reckoned the perforations of the palat, by which the nerves descend from the fourth conjugation, to give, or cause the taste. In the sixt order are ranked the holes of the palat serving for the respiration, and the flegm falling from the brain by the nostrils. And there is a cleft under the yoak bone ascending into the Orb of the eye, by which there is a way, as wel for the nerves of the third conjugation to the temporall muscles, as also for certain veins and arteries. But also there is noted another hole at the mamillary process, which is not perforated in the judgment of the sense. Besides there is thought to be another at the hind root of the same process, by which a certain small vein passes from the Jugular to the *Torcular*. But I have only noted these three passages by the way, because there is so much variety in them, that nothing can be certainly said of them.

CHAP.

## CHAP. XII.

### *Of the Spinall Marrow, or Pith of the Back.*

THe ſpinall Marrow is like a River running from the fountain of the brain. This ſends nerves for ſenſe and motion to all the neighbouring parts under the head, ſpreading its branches as from the body of a tree. Theſe branches, as we ſhall hereafter ſhew, are on each ſide thirty. This ſame ſpinall marrow is covered with the two membranes inveſting the brain, diſtinguiſhed by no diſtance of place, as in the brain. But alſo it hath another membrane added to theſe, being very hard and denſe, which keeps it from being broken and violated by the violent bending of the body forwards and about. The diſeaſes of this marrow do almoſt cauſe the like Symptomes, as the diſeaſes of the brain; For they hurt the ſenſe and motion of all the parts lying beneath them: as for example; If any of the *vertebra's* of the back bone, be moved out of their place, there follows a diſtortion or wreſting aſide of the Marrow; but then eſpecially if it happen that one of the *vertebra's* be ſtrained, ſo ſharp and bitter a compreſſion urges the marrow by reaſon of the bony body of the *vertebra*, that it will either rend it, or certainly hinder the paſſage of the ſpirit by it. But by theſe ſame holes of the *vertebra's* the veins and arteries go to the ſpinall marrow for to give life and nouriſhment to it, as the nerves by them paſs forth into all the lower parts of the body.

What the ſpinall marrow is.

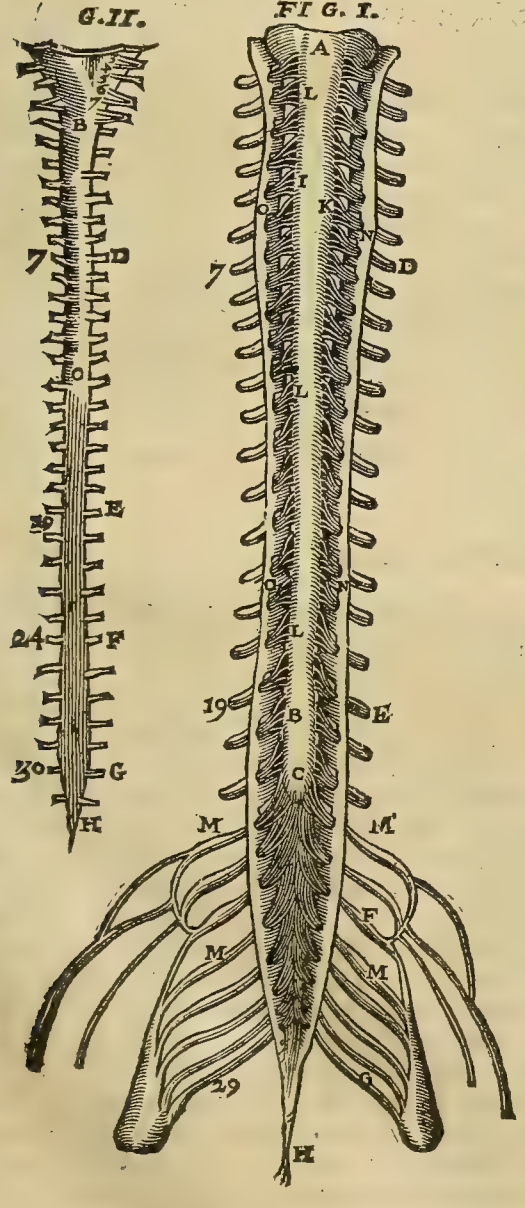
The coats of the ſpinall marrow.

The diſeaſes from the hurting of the ſpinall marrow.

*Figure* 1. *ſheweth the form of the ſpinall marrow properly ſo called, with its membranes, and the nerves proceeding from it.*

*Figure* 2. *the ſpinall marrow naked and bare, together with its nerves, as moſt part of Anatomiſts have deſcribed it.*

*The tenth Figure of the ſpinall marrow.*




*A.* The beginning of the ſpinall marrow where it fals out of the skull.

*B.* The thickneſs thereof in the ſpondels or rack bones of the loins.

*C.* The diviſion thereof into ſtrings, or hairy threds.

*D.* The ſeven nerves of the neck.

From *D.* to *E.* or from 7. to 19. ſhew the nerves of the back.

From *E.* to *F.* the nerves of the loins.

From *F.* to *G.* the nerves of the *Os ſacrum* or holy bone.

*H.* The end of the marrow.

*IKL.* Do ſhew how the nerves do iſſue from the marrow in ſtrings.

*MM.* The knots of the ſinews made of the conjunction of thoſe ſtrings.

*NO.* The membranes that inveſt the marrow.

*Figure* 2.

*A.* The beginning of the ſpinall marrow in the skull.

3,4,5,6,7. theſe Characters ſhew (according to *Veſalius* opinion) how the conjugations of the nerves of the brain do take their originall from the marrow remaining yet within the skull.

*B.* The egreſs of the ſpinall marrow out of the skull.

*C.* The cords or ſtrings whereinto it is divided.

*D* 7. The marrow of the neck and ſeven pair of ſinews. *E* 19. Twelve pair or conjugations of nerves proceeding from the marrow of the Cheſt.

*F* 24. The marrow of the loins and 5. pair of ſinews. *G* 30. the marrow of the holy bone and 6. pair of ſinews.

*H.* The extremity or end of the ſpinall marrow.

*The End of the Fifth Book.*

# The Sixth Book,

## Treating of the *Muſcles and Bones, and the other Extreme parts of the BODY.*

### *The Preface.*

The deſcription of the bones being unknown, it muſt neceſſarily follow that the originall and inſertion of the muſcles muſt be ſo alſo.

PEradventure ſome may wonder that I have ended my fifth book of Anatomy, before I have fully deſcribed all the parts of the head, the which ſeemed as it were only appointed for that purpoſe. Therefore I muſt yeeld a reaſon of this my intention. I have a deſire in one Treatiſe and as it were at one breath, to proſecute the Anatomy of the Muſcles. Wherefore becauſe the parts of the head not yet deſcribed, principally conſiſt of the Muſcles, therefore I deſired to comprehend them together with this ſame deſcription of the extreme parts of the body; beginning at the upper part of the face; to wit, the eyes: but having firſt deſcribed the bones of the face, without the knowledg of which it is impoſſible to ſhew the originall and inſertion of the Muſcles. We have formerly noted, that by the face is meant whatſoever lyes from the Eye-browes even to the Chin. In which there is ſuch admirable induſtry of nature, that of the infinite multitude of men you cannot find two ſo like, but that they may be diſtinguiſhed by ſome unlikeneſſe in their faces; alſo it hath adorned this part with ſuch exquiſite beauty, that many have dyed by longing to enjoy the beauty deſired by them. This ſame face albeit it little exceeds halfe a foot, yet it indicates and plainly intimates by the ſodain changes thereof, what affections and paſſions of hope, fear, ſorrow and delight poſſeſſe our minds; and what ſtate our bodies are in, ſound, ſick, or neither. Wherefore ſeeing the face is of ſo much moment, let us return to the Anatomicall deſcription thereof, which that wee may eaſily and plainly perform we will begin with the bones thereof, whereby, as we formerly ſaid, the originall and inſertion of the Muſcles may be more certain and manifeſt to us.

The endowments of the face.
The countenance is the bewrayer of the will.

### CHAP. I.

### *Of the bones of the Face.*

Bones in each orb of the Eye.

THe bones of the face are 16, or 17. in number. And firſt, there be reckoned 6. about the orbs of the eyes, that is 3. to each orb, of which one is the bigger, another leſſer, and the third between both; each of theſe touch the forehead bone in their upper part. Beſides, the greater is joyned with a ſuture to the proceſſe of the ſtony bone, and ſo makes the *Zygoma*, that is, the *Os Jugale* or yoak bone, framed by nature for preſervation of the temporall muſcle. The leſſer is ſeated at the greater corner of the eye, in which there is a hole perforated to the noſe, and in this is the glandule in which the Ægylops doth breed. The middle is in the bottom, or inner part of the orb, very ſlender and as it were of a membranous thinneſſe: then follow the two bones of the noſe which are joined to the forehead bone by a ſuture, but on the foreſide between themſelves by harmony. But on the back or hind part with two other bones, on each ſide one, which deſcending from the bone of the forehead (to which alſo they are joined by a ſuture) receive all the teeth. Theſe two in *Galens* opinion are ſeldome found ſeparated. But theſe are the thickeſt of all the bones of the face hitherto mentioned, knit by a ſuture with the greateſt bone of the orb, on the back part with the wedg-bone, on the inner ſide with the two little inner bones of the palat, which on the inſide make the extremity thereof, whereby it comes to paſſe, that we may call theſe bones the hinder, or inner bones of the palat. They reckon one of theſe bones the eleventh and the other the twelfth bone of the head; theſe two little bones on their ſides next to the winged productions of the wedge-bone, receive on each ſide one of the nerves of the fourth

What the *Zygoma* is, and what uſe it hath.
The *Ægylops*.
The two bones of the noſe.
The two inner bones of the palat.

fourth conjugation, which in the former book, we ſaid were ſpent upon the membrane of the palat.

And in *Galens* opinion there be other two in the lower Jaw, joined at the middle of the chin; although ſome think it but one bone, becauſe by the judgement of ſenſe there appears no diviſion or ſeparation therein. But you may ſee in children how true this their ſuppoſition is, for in men of perfect growth it appears but one bone; theſe two are reckoned for the thirteenth and fourteenth bones. Now theſe two bones making the lower Jaw, have in in their back part on each ſide two productions, as they lye to the upper Jaw, the one of which repreſents the point of a ſword, and is called the *Corone*; the other is obtuſe and round; which is inſerted into the cavity ſeated at the root of the proceſſe of the ſtony bone, neer to the paſſage of the ear.

The two bones of the Iaw.

Two productions on each ſide of the lower Iaw.

This may be ſtrained to the forepart by violent gaping, by retraction of the muſcles ariſing from the wing-like proceſſes, and ending at the lower angles of the broader part of the ſame Jaw.

The Luxation of the lower Iaw.

This Jaw is hollow as alſo the upper, eſpecially in the back-part, being filled with a white and glutinous humour, conducing to the growth of the teeth. This humour hath its matter from the blood brought thither by the veſſels, veins, arteries and nerves from the third conjugation entring in here by a paſſage large enough. Whereby it comes to paſſe, that this part is not only nouriſhed and lives, but alſo the teeth receive ſenſe by the benefit of the nerves entring thither with the vein and artery, by ſmal holes to be ſeen at the lower roots of the teeth; and thence it is that a beating pain may be perceived in the tooth-ach, becauſe the defluxion may be by the arteries; or rather becauſe the humour flowing to the roots of the teeth, may preſſe the artery in that place; beſide alſo you may ſee ſome appearance of a nervous ſubſtance in the root of a tooth newly pluckt out.

The lower Iaw filled with a marrowy humor.

How the teeth feel.

Why the teeth have a beating pain.

But alſo you muſt conſider, that this Jaw from its inner capacity produces at the ſides of the chin two nerves of a ſufficient magnitude, over againſt the lower dog-teeth, and the firſt of the ſmaller grinding teeth, as I have noted in the deſcription of the nerves of the third conjugation. I have thought good to put thee in mind of theſe, that when thou ſhalt have occaſion to make inciſion in theſe places, thou maiſt warily and diſcreetly handle the matter, that theſe parts receive no harme.

The nerves of the lower Iaw muſt be obſerved.

There remains another bone ſeated above the palat, from which the griſtly partition of the noſe ariſes, being omitted of all the Anatomiſts, for as much as I know. Now therefore that you may the better remember the number of the bones of the face, I will here make a repetition of them.

The bone of the noſe above the palate, or the partition of the noſe.

There are ſix of the orbs of the eyes, at each three. The ſeventh and eight wee may call the Naſall, or noſe bones. The ninth and tenth the Jaw-bones. The eleventh and twelfth are called the innee bones of the palat. The thirteenth and fourteenth the bones of the lower Jaw. The partition of the noſe may be reckoned the fifteenth.

Now it remains having ſpoken of theſe bones, that wee treat of the teeth, the Eye-browes, the skin, the fleſhy pannicle, the Muſcles, and laſtly, the other parts of the face.

## CHAP. II.

### *Of the Teeth.*

THe teeth are of the number of the bones, and thoſe which have the moſt have thirty two, that is, ſixteen above, and ſo many below; of which in the forepart of the mouth there are four above and as many beneath, which are called *Inciſorii* cutting or ſhearing teeth, to cut in ſunder the meat, and they have but one root. To theſe are joyned two in each Jaw, that is, on each ſide of the other one, which are called *Canini dentes*, Dog-teeth, becauſe they are ſharp and ſtrong like dogs-teeth; theſe alſo have but one root, but that is far longer then the other have.

The teeth are bones.

The ſhearing teeth.

The Dogteeth.

Then follow the *Molares* or Grinders, on each ſide five, that is, ten above, and as many below, that they may grind, chaw, and break the meat, that ſo it may be the ſooner concocted in the ſtomach; for ſo they vulgarly think, that meat well chawed is halfe concocted; thoſe grinders which are faſtened in the upper Jaw, have moſt commonly three roots, and oft-times four. But theſe which are faſtened in the lower, have only two roots, and ſometimes three, becauſe this lower jaw is harder than the upper ſo that it cannot be ſo eaſily hollowed, or elſe becauſe theſe teeth being fixed and firmly ſeated, needed not ſo many ſtayes as the upper, which as it were hang out of their ſeats. The ſhearing teeth cut the meat becauſe they are broad and ſharp; the dog-teeth break it, becauſe they are ſharp pointed and firm; but the grinders being hard, broad and ſharp, chaw and grind it aſunder. But if the grinders had been ſmooth, they could not fitly have performed their duty, for all things are chawed and broken aſunder more eaſily by that which is rough and unequall.

The Grinding teeth.

Why the upper grinding teeth have more roots.

The uſe of the teeth.

Wherefore they ſharpen their Milſtones when they are ſmoother than they ſhould be,

by

The teeth are faſtened in the Iaws by *Gomphoſis*.

by picking them with a ſharp Iron. The teeth are faſtened in the jawes by *Gomphoſis*, that is, as a ſtake or nail, ſo are they fixed into the holes of their jaws; for they adhere ſo firmly thereto in ſome, that when they are pluckt out, part thereof followes together with the tooth; which I have often obſerved to have been alſo with great effuſion of blood. This adheſion of the teeth faſtened in their jaws, is beſides ſtrengthned with a ligament, which applies it ſelfe to their roots together with the nerve and veſſels. The teeth differ from the other bones, becauſe they have action whilſt they chaw the meat; becauſe being loſt they may be regenerated, and for that they grow as long as the party lives, for otherwiſe by the continuall uſe of chawing they would be worn and waſted away by one another. You may perceive this by any that have loſt one of their teeth, for that which is oppoſite to it becomes longer than the reſt, becauſe it is not worn by its oppoſite. Beſides alſo they are more hard and ſolid than the reſt of the bones, and indued with a quick ſenſe by reaſon of the nerves of the third conjugation which inſert themſelves into their roots; for if you rub, or grind a tooth newly pluckt out, you may ſee the remains of the nerve; they have ſuch quick ſenſe, that with the tongue they might judg of taſtes. But how feel the teeth, ſeeing they may be filed without pain? *Fallopius* anſwers, that the teeth feel not in their upper or exterior part, but only by a membrane which they have within. And the teeth have another uſe, eſpecially the fore-teeth, which is, they ſerve for diſtinct and articulate pronuntiation; for thoſe that want them faulter in ſpeaking, as alſo ſuch as have them too ſhort, or too long, or ill ranked. Beſides, children ſpeak not diſtinctly before they have their fore-teeth. And you muſt note that the infant as yet ſhut up in its mothers womb hath ſolid and bony teeth; which you may perceive by diſſecting it preſently after it is born.

The faſtening of the teeth into the Iaws is to be obſerved.

Wherein the teeth differ from the other bones.

For what uſe the teeth have ſenſe.

The fore-teeth help for the articulation of the voice.

But even as there are two large cavities in the forehead bone at the eye-browes, filled with a viſcous humor, ſerving for the ſmelling; and in like manner, the air ſhut up in the mamillary proceſſes is for hearing; ſo in the jaws there be two cavities furniſhed with a viſcid humour for the nouriſhment of the teeth.

## CHAP. III.

### *Of the Broad Muſcle.*

NOw we ſhould proſecute the containing parts of the face; to wit, the skin, the fleſhy pannicle and fat; but becauſe they have been ſpoken of ſufficiently before, I will only deſcribe the fleſhy pannicle, before I come to the diſſection of the eye, that wee may the more eaſily underſtand all the motions performed by it, whether in the face or forehead.

First, that you may more eaſily ſee it, you muſt curiouſly ſeparate the skin in ſome part of the face. For unleſſe you take good heed, you will pluck away the fleſhy pannicle together with the skin, as alſo this broad muſcle to which it immediately adheres, and in ſome places ſo cloſely and firmly, as in the lips, eye-lids and the whole forehead, that it cannot be ſeparated from it, Nature hath given motion, or a moving force to this broad muſcle, that whilſt it extends, or contracts it ſelf, it might ſerve to ſhut and open the eye. It will be convenient to ſeparate the muſcle thus freed from the skin, beginning from the forepart of the clavicles even to the chin, aſcending in a right line, and then turning back as far as you can; for thus you ſhall ſhew how it mixes it ſelf with the skin and the muſcles of the lips.

There are no particular muſcles appointed to open and ſhut the eye, for that is the work of the broad muſcle only. Divers reaſons to that purpoſe.

When thou ſhalt come to the eyes, thou ſhalt teach how the eye is ſhut and opened by this one muſcle, becauſe it is compoſed of the three ſorts of fibers; although by the opinion of all who have hitherto written of Anatomy, thoſe actions are ſaid to be performed by the power of two muſcles appointed for that purpoſe; one of which is at the greater corner on the upper part, the other reſembling a ſemicircle at the leſſer corner, from whence extending it ſelf to the middle of the griſtle *Tarſus*, it meets with the former ending there, but they are in part extended over all the eye-lid, whereby it commeth to paſſe that it alſo in ſome ſort becommeth movable. But although in publike diſſections theſe two muſcles are commonly wont to be ſolemnly ſhewed, after the manner I have related; yet I think, that thoſe which ſhew them know no more of them than I do. I have grounded my opinion from this, that there appears no other muſculous fleſh in theſe places, to thoſe which ſeparate the fleſhy pannicle, or broad muſcle, than that which is of the pannicle it ſelf, whether you draw your inciſion knife from the forehead downwards, or from the cheek upwards.

Why you muſt take heed of making a tranſverſe inciſionu pon the eyebrowes.

Beſides, when there is occaſion to make inciſion on the eye-browes, we are forbidden to doe it tranſverſe, leſt this broad muſcle falling upon the eye, make the upper eye-lid unmoveable: but if ſuch a cut be received accidentally, we are commanded preſently to ſtitch it up; which is a great argument that the motion of the upper eye-lid is not performed by its proper muſcles, but wholly depends and is performed by the broad muſcle. Now if theſe ſame proper muſcles which we have deſcribed ſhould be in the upper eye-lid, it ſhould

be

be meet, (becauſe when one of the muſcles is in action, the other which is its oppoſite or Antagoniſt, reſts or keeps holyday:) that when that which is ſaid to open the eye is imployed, the oppoſite thereof reſting, the upper eye-lid ſhould be drawn towards its originall, as we ſee it happens in convulſions: becauſe the operation of a muſcle is the collection of the part which it moves towards its originall. The action of a muſcle.

Therefore ſeeing ſuch a motion or collection appears not any where in the eye-lid, I think it therefore manifeſt that all the motion of this upper eye-lid depends upon this broad muſcle, and that it alone is the author of the motion thereof.

The originall of this broad muſcle is from the upper part of the *Sternon*, the clavicles, the ſhoulder blades, and all the ſpines of the *vertebra's* of the neck: but it is inſerted into all theſe parts of the head which want hair, and the whole face, having divers fibers from ſo various an originall, by benefit of which it performs ſuch manifold motions in the face (for it ſo ſpreads it ſelf over the face, that it covers it like a vizard) by reaſon of the variety of the original and the production of the divers fibers of this muſcle. But I have not in the deſcription of this muſcle proſecuted thoſe nine conditions, which in the firſt book of my Anatomy I required in every part, becauſe I may ſeem to have ſufficiently declared them in the deſcription of the muſcles of the *Epigaſtrium*. Wherefore hence forward you muſt expect nothing from me in the deſcription of muſcles beſides their original, inſertion, action, compoſition, and the deſignation of their veſſels. The originall of the broad muſcle. The inſertion and reaſon why we expreſſe ſo many motions with the face.

## CHAP. IV.

### *Of the Eye-lids and Eye-browes.*

BEcauſe we have faln into mention of the eye-lids, and eye-browes, and becauſe the order of diſſection alſo requires it, we muſt tell you what they are, of what they conſiſt, and how and for what uſe they were framed by nature. Therefore the eye-browes are nothing elſe, than a rank of hairs ſet in a ſemicircular form upon the upper part of the orb of the eye, from the greater to the leſſer corner thereof, to ſerve for an ornament of the body, and a defence of the eyes againſt the acrimony of the ſweat falling from the forehead. What the eye-browes are. Their uſe.

But the ey-lids on each ſide two, one above and another below, are nothing elſe than as it were certain ſhuttings appointed and made to cloſe and open the eyes when need requires, and to contain them in their orbs. Their compoſure is of a muſculous skin, a griſtle and haires ſet like a pale at the ſides of them to preſerve the eyes when they are open, chiefly againſt the injuries of ſmall bodies, as motes, duſt and ſuch like. Theſe hairs are alwaies of equall and like bigneſſe, implanted at the edges of the griſtly part, that they might alwaies ſtand ſtreight and ſtiffe out. They are not thick, for ſo they ſhould darken the eye. The griſtle in which they are faſtned is encompaſſed with the *pericranium* ſtretched ſo far before it produce the *Conjunctiva*. It was placed there, that when any part thereof, ſhould be drawn upwards or downwards by the force of the broad muſcle or of the two proper muſcles, it might follow entirely and wholly by reaſon of its hardneſſe. They call this ſame griſtle, eſpecially the upper, *Tarſus*. The upper and lower eye-lid differ in nothing, but that the upper hath a more manifeſt motion, and the lower a more obſcure: for otherwiſe nature ſhould have in vain encompaſſed it with a muſculous ſubſtance. What the eye-lids are. Their compoſure and uſe. What the *Tarſus* is.

## CHAP. V.

### *Of the Eyes.*

THe Eyes are the inſtruments of the faculty of ſeeing, brought thither by the viſive ſpirit of the optick nerves, as in an aqua-duct. They are of a ſoft ſubſtance, of a large quantity, being bigger or leſſer according to the bigneſſe of the body. They are ſeated in the head, that they might overlook the reſt of the body, to perceive and ſhun ſuch things as might endanger, or endamage the body; for the action of the eyes is moſt quick, as that which is performed in a moment, which is granted to none of the other ſenſes. Wherefore this is the moſt excellent ſenſe of them all. For by this we behold the fabrick and beauty of the heavens and earth, diſtinguiſh the infinite varieties of colours, we perceive and know the magnitude, figure, number, proportion, ſite, motion and reſt of all bodies. The eyes have a pyramidall figure whoſe baſis is without, but the Cone or point within at the optick nerves. Nature would have them contained in a hollow circle, that ſo by the profundity and ſolidity of the place they might be free from the incurſions of bruiſing and hurtfull things. What the eyes are. Their ſite. The quickneſs and excellency of their action. Figure.

They are compoſed of ſix muſcles, five coats, three humours, and a moſt bright ſpirit, (of which there is a perpetual afflux from the brain) two nerves, a double vein, and one artery, Compoſition.

*Glandula Lachrymalis.*

tery, beſides much fat, and laſtly, a Glandule ſeated at the greater angle thereof, upon that large hole which on both ſides goes to the noſe, and that, leſt that the humors falling from the brain ſhould flow by the noſe into the eyes, as we ſee it fares with thoſe whoſe eyes perpetually weep, or water, by reaſon of the eating away of this glandule, whence that affect is called, the *Fiſtula lachrymalis*, or weeping Fiſtula.

*Fiſtula Lachrymalis.*

Why fat is placed about the eyes.

But there is much fat put between the muſcles of the eye, partly that the motion of the eyes might be more quick, in that ſlipperineſſe of the fat, as alſo that the temper and complexion of the eyes, and chiefly of their nervous parts, might be more conſtant and laſting, which otherwiſe by their continuall and perpetuall motion would be ſubject to exceſſive dryneſſe. For nature, for the ſame reaſon hath placed Glandules flowing with a certain moiſture, neer thoſe parts which have perpetuall agitation.

## CHAP. VI.

### *Of the Muſcles, Coats and humors of the Eye.*

The number, ſite and action of the muſcles.

THere are ſix muſcles in the eye, of which four perform the four direct motions of the eye: they ariſe from the bottom of the orb, and end in the midſt of the eye encompaſſing the optick nerve. When they are all moved with one endevour, they draw the eye inwards. But if the upper only uſe its action, it draws the eye upwards; if the lower, downwards; if the right, to the right ſide; if the left, to the left ſide.

The two other muſcles turn the eye about; the firſt of which being the longer and ſlenderer, ariſes almoſt from the ſame place, from which that muſcle ariſes, which draws the eye to the right ſide to the greater corner. But when it comes to the utmoſt part of the inner angle, where the *Glandula lachrymalis* is ſeated, it ends in a ſlender Tendon, there piercing through the middle membrane which is there, as through a ring; from whence it preſently going back is ſpent in a right angle towards the upper part of the eye, betwixt the inſertions of thoſe two muſcles, of the which one draws the eye upwards, the other directly to the outward corner, as it is obſerved by *Fallopius*, or rather, which I remember I have alwaies obſerved, they turn between the muſcles which move the eye upwards, and to the inner corner.

This fifth muſcle when it is drawn in towards its beginning, ſo draws the eye with its circular tendon, that it carries it to the greater corner.

The ſixt muſcle is contrary to that; for it hath its originall from the lower part of the orb at a ſmall hole, by which a nerve of the third conjugation paſſes forth; and being that it is moſt ſlender, whilſt it aſcends tranſverſly to the outward corner, it involves the eye ſo alſo, that it is inſerted in it by a ſmall Tendon, ſo that the Tendons of them both are oftentimes taken but for one. That thou mayſt truly and accurately obſerve this anatomicall deſcription of the eye; the eye muſt not be pluckt out of its orb, but rather the orb it ſelf muſt be broken and ſeparated.

For thus thou ſhalt certainly and plainly ſee the forementinoed original of the muſcles.

The 5 coats of the eye.

For the five coats, the firſt which is firſt met with in diſſection, comes from the *Pericranium*, and is extended over all the white of the eye, even to the *Iris* or Rain-bow. The duty of it is to ſtrengthen, bind and contain the eye in its orb, wherefore it had the name *Conjunctiva*, others called it *Adnata*, or *Epipephycos*.

1 *Conjunctiva*, or *Adnata.*

2 *Cornea*, or the Horny coat.

The ſecond is called the *Cornea*, becauſe it reſembles a horn in colour and conſiſtence; this coat differs and varies from it ſelf, for in the forepart, as far as the *Iris* goes, it is clear and perſpicuous, but thick and obſcure in the hind part, by reaſon of the diverſe poliſhing. On the fore-part it is denſe, that it may preſerve and contain the Cryſtalline and wateriſh humor, but withall tranſparent, ſo to give the object a freer paſſage to the Cryſtalline. It hath its originall from the *Craſſa meninx*, proceeding forth from the inner holes of the orb of the eye, for it compaſſes the eye on every ſide.

3 *Vvea*, or the grapy coat.

The third is called the *Vvea* or Grapy coat, becauſe in the exterior part it repreſents the colour of a black grape; it ariſes from the *Pia mater*, and encompaſſes all the eye, except the *pupilla* or apple of the eye, for here being perforated, it adheres to the horny coat by the veins and arteries which it communicates to it for life and nouriſhment. But when it arrives at the *Iris*, then forſaking the *Cornea*, it deſcends deep into the eye, and in ſome ſort is turned about the Cryſtalline humour, to which alſo it moſt firmly adheres, ſo bounding the wateriſh humour, and alſo prohibiting that the Albugineous humor do not overwhelm the Cryſtalline.

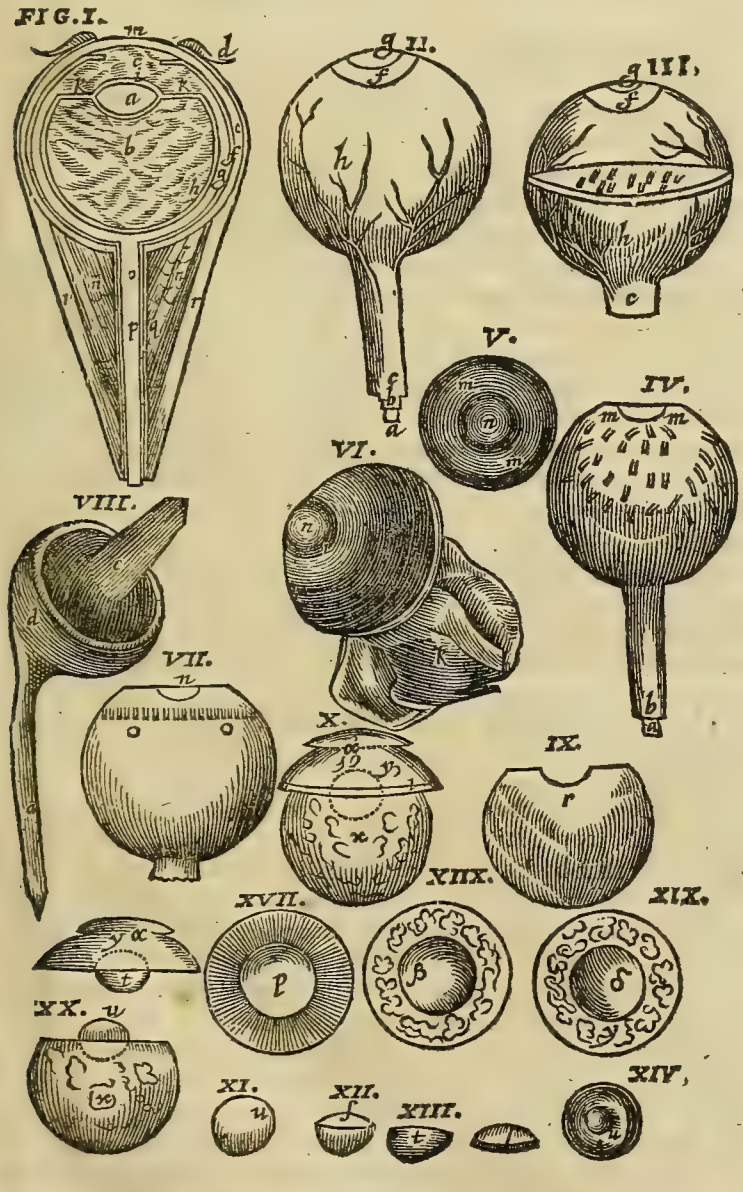
Why the grapy coat reſembles divers colours.

This grapy coat is as it were dyed on the inſide with divers colours, as black, brown, blew, or green like a rain-bow, and that for theſe enſuing benefits.

The firſt is, if that it had been tinctured with one colour, all objects would have appeared of the ſame colour, as it comes to paſſe when we look through green or red glaſſe. But it muſt be coloured, that ſo it may collect the ſpirits diſſipated by the Sun and ſeeing.

*Table* 3. *figure* 1. *ſheweth the Membranes and humors of the eye by lines drawn after the manner of a true eye.*
*Figure* 2. *ſheweth the horny coat with a portion of the Optick Nerve.*
*Fig.* 3. *ſheweth the ſame divided by a tranſverſe ſection.*
*Fig.* 4. *ſheweth the* Uvea *or Grapy coat with a portion of the Optick Nerve.*
*Fig.* 5. *The Grapy coat of a mans eye.*
*Fig.* 6. *The Horny, Grapy and the Choroides.*
*Fig.* 7. *The interiour ſuperficies of the Grapy coat.*
*Fig.* 8. *The poſteriour part of the horny coat together with the ſaid Net coat ſeparated from the Eye.*
*Fig.* 9. *The coat of the vitreous or glaſſy humor called Hyaloides.*
*Fig.* 10. *Three humours joined together.*
*Fig.* 11. *The forward part of the Cryſtalline.*
*Fig.* 12. *The Cryſtalline humour covered yet with his coat.*
*Fig.* 14. *The Cryſtalline of a mans eye.*
*Fig.* 15. *His Coat.*
*Fig.* 16. *The watery humor diſpoſed upon the Cryſtalline round about.*
*Fig.* 17. *The hairy proceſſes beamingly ſprinkled through the foreſide of the coat of the glaſſy humor.*
*Fig.* 18. *The foreſide of the glaſſy humor.*
*Fig.* 19. *The place of the watery humor.*
*Fig.* 20. *The glaſſy humor containing or comprehending the Cryſtalline.*

*The figure of the Eye.*




*The explcation of the firſt Figure by it ſelfe.*
*a*, The Cryſtalline humor.
*b*, The Glaſſie humor.
*c*, The watery humor.
*d*, The utmoſt coat called *Adnata*.
*e*, The dark part of the horny Tunicle which is not tranſparent.
*f*, The Grapy coat called *Vvea*.
*g*, The Net-like coat called *Retiformis*.
*h*, The coat of the glaſſy humor cald *Hyaloides*.
*i*, The coat of the Cryſtalline.
*kk*, The hairy proceſſes cald *Proceſſus ciliares*.
*l*, The impreſſion of the Grapy coat where it departeth from the thick coat.
*m*, The horny coat, a part of the thick coat.
*nn*, The fat betwixt the Muſcles.
*o*, The optick Nerve.
*p*, The *Dura meninx*.
*q*, The *Pia mater* or thin Meninx.
*rr*, The Muſcles.

*The explication of the other* 19. *figures together.*
*a* 2, 4, 8. The Optick nerve. *b* 2, 4, The thin *Meninx* cloathing the Nerve. *c* 2, 3. The thick *Meninx* cloathing the nerve. *d* 8. the poſterior part of the horny coat. *e* 8. The coat called *Retina* gathered together on an heap. *f* 2, 3. The rain-bow of the eye. *g* 2, 3. The leſſer circle of the eye or the *pupilla*. *h* 2, 3. Veſſels diſperſed through the *Dura meninx*. *i* 3, 6. The grapy coat, but *i*, in the 3. Fig. ſheweth how the veſſels doe join the hard membrane with the grapy coat. *k*, 6. The horny or hard membrane turned over. *ll* 3, 4. Certain fibers and ſtrings of veſſels, whereby the grapy coat is tyed

to

to the horny. *m m* 4, 5. The impreſſion of the grapy coat where it recedeth or departeth from the horny coat. *n n* 4, 5, 6, 7. The *pupilla* or apple of the eye. *o o* 7. The Ciliar or hairy proceſſes. *p* 7. The beginning of the grapy coat made of a thin membrane dilated, but *p* in the 17. figure ſheweth the Ciliar proceſſes ſprinkled through the fore part of the glaſſie humor. *r* 9. The boſome or depreſſion of the glaſſie humor receiving the Cryſtalline. *ſ* 12, 15. The bredth of the coat of the Cryſtalline. *t* 12, 13, 14, 16. The poſterior part of the Cryſtalline humor, which is ſpherical or round. *u* 11, 14, 20. The fore part of the ſame Cryſtalline depreſſed. *x* 10, 20. The amplitude of the glaſſie humor. *y* 10, 16, 19. The amplitude of the watry humor. *z* 19. The place where the glaſſie humour is diſtinguiſhed from the watry by the interpoſition of the *Hyaloides* or coat of the glaſſy humor. *α* 10, 16. The place where the grapy coat ſwimmeth in the watry humor. *β* 18. The cavity or depreſſion of the glaſſie humor which remaineth when the Cryſtalline is exempted or taken from it. *δ* 19. the cavity or depreſſion of the watry humor made by the ſame means.

Thirdly, it was convenient it ſhould be painted with infinite variety of colours for the preſervation of the ſight. For as the extream colours corrupt and weaken the ſight, ſo the middle refreſh and preſerve it, more or leſſe as they are neerer, or further remote from the extremes. It was fit it ſhould be ſoft, that ſo it might not hurt the Cryſtalline humor upon whoſe circumference it ends; and perforated in the part objected to it, leſt by its obſcurity it ſhould hinder the paſſage of the objects to the Cryſtalline, but rather that it might collect by its blackneſſe as a contrary, the great and as it were diffuſed variety of colours, no otherwiſe than we ſee the heat is ſtrengthned, by the oppoſition of cold; ſome call this coat *Choroides*, becauſe it is woven with many veins and arteries, like the coat *Chorion* which involves the infant in the womb.

*Amphibleſtroides* or *Retiformis*, Net-like coat.

Now followes the fourth coat called *Amphibleſtroides* or *Retiformis*, the Net-like coat, becauſe proceeding from the optick nerve dilated into a coat, it is woven like a net with veins and arteries which it receives from the grapy coat, both for the life and nouriſhment both of it ſelf, as alſo of the glaſſie humor which it encompaſſes on the back part. The principall commodity of this coat is, to perceive when the Cryſtalline humor ſhall be changed by objects, and to lead the viſive ſpirit inſtructed or furniſhed with the faculty of ſeeing, by the mediation of the glaſſie humour, even to the Cryſtalline being the principall inſtrument of ſeeing. It is ſofter than any other coat, leſt the touch of it ſhould offend that humor. Wherein thou wilt admire the ſingular order of nature, which as in other things it paſſes not from one extreme to another unleſſe by a *Medium*, ſo here it hath not fitted the hard horny coat to the ſoft humors, but by interpoſition of divers *media* of a middle conſiſtence. For thus after the harder coats *Adnata* and *Cornea* it hath placed the grapy coat, by ſo much ſofter then theſe two, as the Net-like coat is ſofter then it, that thus it might paſſe from extreme to extreme as it were by theſe degrees of hardnes and ſoftnes.

An Anatomicall Axiome.

5 *Arachnoides, ſive Araneoſa*, the Cobweb-coat.

The fifth and laſt coat is called *Arachnoides*, becauſe it is of the conſiſtence of a ſpiders web. And we may well reſemble this coat, to that skin of an union which exceeds the other in clearneſs, whiteneſs, and thinneſs. This *Araneoſa* or Cobweb-like coat encompaſſes the Cryſtalline humor on the fore ſide, peradventure that ſo it might defend it, as the chief inſtrument of ſeeing, if the other humors ſhould at any time be hurt. It hath its originall from the excrementitious humidity of the Cryſtalline humor, hardned into that coat by the coldnes of the adjacent part; abſolutely like the thin skin which encompaſſes the white of an Egg.

The 3 humors of the eye.

1 *Aqueus*, or watery.

The firſt humor of the eye is called the *Aqueus* or wateriſh, from the ſimilitude of water; it is ſeated between the tranſparent part of the horny coat, the portion of the Cryſtalline humor lying towards the apple of the eye, and that reflection of the grapy coat which comes from the *Iris* to the circumference of the Cryſtalline humor, that filling the empty ſpace it may diſtend the *Cornea*, and ſo hinder the falling thereof upon the Cryſtalline which would ſpoil the ſight; as alſo that by its moiſture it might hinder the drying of the Cryſtalline humor. Peradventure it is made of the whayiſh humor ſweating out of the veſſels of the coats, having their orifices for the moſt part in that place, where this wateriſh humor reſides. The ſecond humor and middlemoſt in ſituation is called the Cryſtalline, becauſe it imitates Cryſtall in the brightnes and colour; if ſo be that we may attribute any colour to it. For indeed it was fit that none of the three humors ſhould be tinctured with any colour, as thoſe which would be the inſtruments of ſight, leſt they might beguile us in ſeeing, as red and green ſpectacles do; for that is true which we have red written by the Philoſopher; That the ſubject or matter appointed for the reception of any form ſhould want all impreſſion thereof. Hence nature hath created a formleſs matter, the humors of the eyes without colours, wax without any figure, the mind without any particular knowledg of any thing, that ſo they might be able to receive all manner of forms. The figure of the Cryſtalline humor is round, yet ſomewhat flatted on the foreſide, but yet more flatted behind, that ſo the objects might be the better retained in that, as it were, plane figure, and that they might not fly back as from a Globe, or round body, in which they could make but ſhort ſtay; leſt it might be eaſily moved from its place by the force of any thing

2 *Cryſtallinus*, *Cryſtalline*.

A Philoſophicall Axiome.

thing falling or hitting againſt it,becauſe that body which is exactly round touches not a plane body but only in a point or prick.Half this humor ſwims in the glaſſie humor,that ſo it may be nouriſhed from it by tranſpoſition of matter; or rather ( ſeeing it is encompaſſed on every ſide with the fift coat, that the matter cannot eaſily be ſent from the one into the other ) by the benefit of the veſſels produced even unto it as well by the Net-like coat as by the Grapy, but it is filled with a bright ſpirit on the forepart, which lyes next to the wateriſh humor ,and the ſpace of the Apple of the eye.

Of which thing this is an argument, that as long as a man remains alive, we ſee the eye every way full, and ſwoln, but lank and wrinkled when he is dead; beſides alſo one of the eyes being ſhut, the *Pupilla* of the other is dilated by the ſpirit compelled to fly thither. And alſo for the ſame cauſe the horny coat is wrinkled in very old men,and the *Pupilla* is ſtraitned by the wrinkles ſubſiding into themſelves, which is the cauſe that they ſee little, or not at all;for by age and ſucceſs of time the humor is conſumed by little and little, the implanted ſpirit vaniſhes away, and ſmaller quantity of ſpirits flow from the brain, as from a fountain which is alſo exhauſted.The horny coat at his original,that is,in the parts next the *Iris*, ſeemeth to be very nigh the Cryſtalline humor, becauſe all the coats in that place mutually cohere as touching one another, but as it runs further out to the *Pupilla*, ſo it is further diſtant from the Cryſtalline. Which you may eaſily perceive by Anatomicall diſſection,and the operation of touching or taking away a Catarrhact: for whereas a Catarrhact is ſeated between the horny coat, and Cryſtalline humor, the needle thruſt in, is carried about upwards, downwards, and on every ſide through a large and free ſpace, neither touching the horny coat nor Cryſtalline humour, by reaſon theſe bodies are ſevered by a good diſtance filled with ſpirit and a thin humour. The uſe of it is, that it may be like a looking-glaſſe to the faculty of ſeeing carried thither with the viſive ſpirit.

*Gal.Cap 5. lib 10. de uſu part.*

In what place Catarrhact or ſuffuſion breeds

The third and laſt humor is the *Vitreus* the glaſſie,or rather Albugineous humor, called ſo, becauſe it is like molten glaſſe, or the white of an Egg.It is ſeated in the hind part of the Cryſtalline humor,that ſo it may in ſome ſort break the violence of the ſpirit flowing from the brain into the Cryſtalline humour, no otherwiſe than the watry humor is placed on the foreſide of the Cryſtalline to hinder the violence of the light and colours entring that way. This glaſſie humor is nouriſhed by the Net-like coat.

3 *Vitreus ſeu Albugineus*, that is Glaſſie or like the white of an Egg.

We have formerly ſpoken ſufficiently of the nerves of the eye: Wherefore it remains that we ſpeak of the veins.Some of theſe are internall, carried thither with the coats of the veſſels of the brain; other ſome externall,ſtretched over the externall parts of the eye, as the Muſcles,and coat *Adnata*; and by theſe veins inflammations and redneſs often happen in the externall parts of the eye: for which the *Vena pupis* muſt be opened, and cupping glaſſes and horns muſt be applyed to the nape of the neck and ſhoulders: as in the internall inflammations of the eye, the cephalik vein muſt be opened to avert and evacuate the morbifick humor.

The veins of the eye.

What veins may be opened in what inflammations of the eyes.

## CHAP. VII.

### *Of the Noſe.*

THe Noſe is called in Greek *Ris*, becauſe the excrements of the Brain flow forth by this paſſage,thou maiſt underſtand it hath a divers ſubſtance by compoſition.The quantity,figure and ſite are ſufficiently known to all.But it is compoſed of the skin and muſcles,bones,griſtles,a membrane or coat nerves, veins and arteries. The skin and bones both contained and containing, have formerly been explained, as alſo the nerves, veins and arteries. The griſtles of the Noſe are ſix in number; the firſt is double, ſeparating both the noſtrills in the top of the noſe extended even to the bone *Ethmoides*. The ſecond lyes under the former. The third and fourth are continued to the two outward bones of the noſe. The fifth and ſixth being very ſlender and deſcending on both ſides of the noſe,make the wings or moveable parts thereof.Therefore the uſe of theſe griſtles is, that the noſe moveable about the end thereof,ſhould be leſſe obnoxious to externall injuries, as fractures and bruiſes,and beſides more fit for drawing the air in and expelling it forth in breathing.For nature for this purpoſe hath beſtowed four muſcles upon the noſe,on each ſide two, one within,and another without.

The Griſtles of the noſe.

The External taketh its original from the cheek,and deſcending obliquely from thence, and after ſome ſort annexed to that which opens the upper lip, is terminated into the wing of the noſe, which it dilates.

The muſcles thereof.

The internall going on the inner ſide from the jaw-bone, ends at the beginning of the griſtles that make the wings, that ſo it may contract them. The coat which inwardly inveſts the noſtrils and their paſſages, it produced by the five-like bones from the *Craſſa meninx*, as the inner coat of the palat,throttle, weazon, gullet and inner ventricle; that it is no mervail, if the affects of ſuch parts be quickly communicated with the brain. This ſame coat on each ſide receives a portion of a nerve from the third

conjugation, through the hole which deſcends to the noſe by the great corner of the eye.

The temper, action and uſe.

The noſe in al the parts thereof is of a cold and dry temper. The Action and profit thereof is to carry the air and oft-times ſmells to the mamillary proceſſes, and from thence to the four ventricles of the brain, for the reaſons formerly ſhewed. But becauſe the mamillary proceſſes being the paſſages of the air and ſmels are double, and for that one of theſe may be obſtructed without the other, therefore nature hath alſo diſtinguiſhed the paſſage of the noſe with a griſtly partition put between, that when the one is obſtructed, the air by the other may enter into the brain for the generation and preſervation of the animall ſpirit. The two holes of the noſe firſt aſcend upwards, and then downwards into the mouth, by a crooked paſſage, leſt the cold air, or duſt ſhould be carried into the lungs.

Why the noſe was parted in two.

But the noſe was parted into two paſſages as we ſee, not only for the forementioned cauſe, but alſo for helping the reſpiration and vindicating the ſmell from externall injuries; and laſtly, for the ornament of the face.

## CHAP. VIII.

### *Of the Muſcles of the Face.*

Their number.

NOw we muſt deſcribe the muſcles of the face pertaining as well to the lips as to the lower jaw. Theſe are 18. in number, on each ſide nine, that is, four of the lips, two of the upper, and as many of the lower. But there belong five to the lower jaw. The firſt of the upper lip being the longer, and narrower, ariſing from the yoak-bone deſcends by the corner of the mouth to the lower lip, that ſo it may bring it to the upper lip, and by that means ſhut the mouth. The other being ſhorter and broader, paſſing forth of the hollowneſs of the cheek, or upper jaw (by which a portion of the nerves of the third conjugation deſcends to theſe two muſcles, and other parts of the face) ends in the upper part of the ſame upper lip, which it compoſes together with the fleſhy pannicle and skin, and it opens it by turning up the exterior fibers towards the noſe, and ſhuts it by drawing the internall inwards towards the teeth.

The firſt of the lower lip being the longer and ſlenderer, entring out of that region which is betwcen the externall perforation of the upper jaw (through which on the inner part of the ſame, a nerve paſſeth forth to the ſame muſcles) and the muſcle *Maſſeter*, (of which hereafter) then aſcending upwards by the corner of the the mouth, it ends in the upper lip, that ſo it may draw it to the lower.

The other broader and ſhorter begins at the lower part of the chin, and the hollowneſs thereof, and ends at the lower lip which it makes, opening it within and without by its internall and externall fibers, as we alſo ſaid of its oppoſite. And that I may ſpeak in a word, nature hath framed three ſorts of muſcles for the motion of the mouth, of which ſome open the mouth, others ſhut it, and otherſome wreſt it and draw it awry; but you muſt note that when the muſcles of one kind jointly perform their functions (as the two upper which we deſcribed in the firſt place, on each ſide one, which draw the lower lip to the upper, and the muſcles oppoſite to them) they make a right or ſtreight motion; but when either of them moves ſeverally, it moves obliquely, as when we draw our mouth aſide. But theſe muſcles are ſo faſtned and fixed to the skin, that they cannot be ſeparated; ſo that it is no great matter whether you call it a muſculous skin, or a skinny muſcle: (Which alſo takes place in the palms of the hands and ſoles of the feet) but theſe muſcles move the lips the upper jaw being not moved at all.

## CHAP. IX.

### *Of the Muſcles of the lower Iaw.*

Their number.

WE have ſaid theſe muſcles are five in number, that is, four which ſhut it, and one which opens it, and theſe are alike on both ſides. The firſt and greater of

The Temporall muſcle.

theſe four muſcles which ſhut the Jaw is called *Crotophita* or Temporall muſcle; it ariſes from the ſides of the forehead and *Bregma* bones, and adhering to the ſame and the ſtony bone, it deſcends under the yoak-bone, from whence it inſerts it ſelf to the proceſſe of the lower jaw which the Greeks call *Corone*, that it may draw it directly to the upper, ſo to ſhut the mouth.

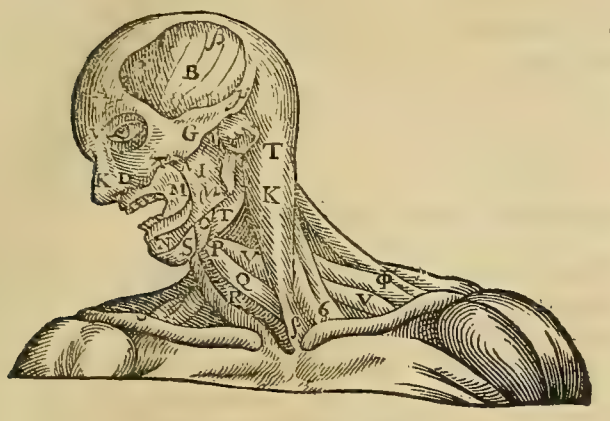
Why the wounds of the temporall Muſcle are deadly.

But you muſt note, that this muſcle is tendinous even to his belly, and that it fils and makes both the temples. It is more ſubject to deadly wounds than the reſt by reaſon of the multitude of nerves diſperſed over the ſubſtance thereof, which becauſe they are neer their originall, that is, the brain, they infer danger of ſodain death by a convulſion which uſually follows the affects of this muſcle, bnt alſo in like manner it cauſes a Feaver, the Phrenſy and *Coma*.

The

*The figure of the chief muſcles of the Face.*

FIG. II.



A. *The muſcle of the forehead and the right fibers thereof.*
B. *The Temporall muſcle.*
α. β. γ. *his ſemicircular originall.*
D. *The muſcle of the upper lip.*
G. *The yoak-bone under which the temporall muſcles paſſe.*
I. *The Maſſeter, or Grinding muſcle.*
K. *The upper griſtle of the noſe.*
M. *A muſcle forming the cheeks.*
N. *The muſcle of the lower lip.*
O. *A part of the fifth muſcle of the lower Iaw called* Digaſtricus, *that is, double bellied.*
Q. R. *The firſt muſcle of the bone* Hyoides *growing unto the rough Artery.*
S. *The ſecond muſcle of the bone* Hyoides *under the Chin.*
T. *The third muſcle of the bone* Hyoides *ſtretched to the Jaw.*
T. K. *The ſeventh muſcle of the head and his inſertion at* T.
V. V. *The two venters of the fourth muſcle of the bone* Hyoides.
Φ. *The place where the veſſels paſſe which go to the head, and the nerves which are ſent to the Arm.*

Therefore that it ſhould be leſſe ſubject or obvious to externall injuries, Nature hath, as it were, made it a retiring place in the bone, and fortified it with a wall of bone raiſed ſomewhat higher about it. The other Muſcle almoſt equall to the former in bigneſs, being called the *Maſſeter*, or grinding muſcle, makes the Cheek; it deſcends from the loweſt part of the greateſt bone of the orb (which bends it ſelf as it were back, that it may make part of the yoak-bone) and inſerts it ſelf into the lower Jaw, from the corner thereof to the end of the root of the proceſſe *Corone*, that ſo it may draw this Jaw forward and backward, and move it like a hand-mill. The *Maſſeter* or grinding muſcle.

Wherefore nature hath compoſed it of two ſorts of fibers, of the which ſome from the neck (the cheek in that place under the eyes ſtanding ſomewhat out like an apple ariſing from the concourſe of the greater bones of the orb and upper jaw) deſcend obliquely to the corner and hinder part of the lower jaw, that it may move it forwards. Otherſome ariſe from the lower part of the ſame yoak-bone, and deſcending obliquely interſect the former fibers after the ſimilitude of the letter X, and inſert themſelves into the ſame lower jaw at the roots of the proceſſe *Corone*, that ſo they may draw it back: Truely by reaſon of theſe contrary motions it is likely this muſcle was called the *Maſſeter* or grinder.

The third, which is the round muſcle, ariſes from all the Gums of the upper jaw, and is inſerted into all the gums of the lower, inveſting the ſides of all the mouth with the coat, with which it is covered on the inſide, being otherwiſe covered on the outſide with more fat than any other muſcle. The action thereof is, not only to draw the lower Jaw to the upper, but alſo as with a ſhovell to bring the meat diſperſed over all the mouth under the teeth, no otherwiſe then the tongue draws it in. The round muſcle.

The fourth being ſhorter and leſſe than the reſt ariſing from all the hollowneſs of the winged proceſſe of the Wedge-bone, is inſerted within into the broadeſt part of the lower Jaw, that ſo in like manner it may draw the ſame to the upper. This is the muſcle through whoſe occaſion, we ſaid this lower Jaw is ſometimes diſlocated. The leſſer muſcle of the lower Iaw.

*The figure of the Muſcles of the lower Jaw.*

FIG. III.

A. *A hole in the forehead bone in the brim of the ſeat of the eye, ſending a ſmall nerve of the third pair to the muſcles of the forehead and the upper eye-brow.*
B. *The Temporall muſcle.*

The fifth and laſt muſcle of the lower jaw from the proceſſe *ſtyloides* of the ſtony bone, aſcends to the forepart of the Chin, neer to the connexion of the two bones of this jaw, The fift and laſt muſcle.

to draw this Jaw downwards from the upper in opening the mouth. This muſcle is ſlender and tendinous in the midſt, that ſo it might be the ſtronger, but it is fleſhy at the ends. All theſe muſcles were made by the ſingular providence of nature, and engraffed into this part for the performance of many uſes and actions, as biting aſunder, chawing, grinding and ſevering the meat into ſmall particles, which the tongue by a various and harmleſs motion puts under the teeth. Thus much I thought good to ſay of the parts of the face, as well containing as contained.

The uſe of theſe mentioned muſcles.

## CHAP. X.

### *Of the Ears and* Parotides *or kernels of the Ears.*

THe Ears are the Organs of the ſenſe of hearing. They are compoſed of the skin, a little fleſh, a griſtle, veins, arteries and nerves. They may be bended or folded in without harm, becauſe being griſtly, they eaſily yeeld and give way; but they would not do ſo, if they ſhould be bony, but would rather break. That lap at which they hang pendants and Jewels, is by the ancients called *Fibra*, but the upper part *pinna*. They have been framed by the providence of nature into two twining paſſages like a Snails ſhell, which as they come neerer to the *foramen cæcum* or blind hole, are the more ſtraitned, that ſo they might the better gather the air into them, and conceive the differences of ſounds and voices, and by little and little lead them to the membrane.

The nature and compoſition of the ears. What the *Fibra* and *pinna* are. The figure and the reaſon thereof.

*The Figure of the ears and bones of the auditory paſſage.*

*Tab.* 10. *ſheweth the ears and the divers internall parts thereof.*

*Fig.* 1. *ſheweth the whole externall ear, with a part of the Temple bone.*

*Fig.* 2. *ſheweth the left bone of the Temple divided in the midſt by the inſtrument of hearing, whereabout on either ſide there are certain paſſages here particularly deſcribed.*

*Fig.* 3, *and* 4. *ſheweth the three little Bones.*

*Fig.* 5. *ſheweth a portion of the bone of the temples which is ſeen neer the hole of Hearing divided through the midſt, whereby the Nerves, Bones and Membranes may appear, as* Veſalius *of them conceiveth.*

*Fig.* 6. *ſheweth the Veſſels, Membranes, Bones and holes of the Organ of hearing, as* Platerus *hath deſcribed them.*

*Fig.* 7, *and* 8. *ſheweth the little bones of the hearing of a man and of a Calfe, both joined and ſeparated.*

*Fig.* 9. *ſheweth the Muſcle found out by Aquapendens.*

For the particular declaration ſee *D. Crooks* Anatomy. pag. 577.

This membrane which is indifferently hard hath grown up from the nerves of the fifth

fifth conjugation, which they call the auditory. But they were made thus into crooked windings, leſt the ſounds ruſhing in too violently ſhould hurt the ſenſe of hearing. Yet for all this we oft find it troubled and hurt by the noiſe of thunder, Guns and Bels. Otherwiſe alſo leſt that the air too ſodainly entring in ſhould by its qualities, as cold, cauſe ſome harm: and alſo that little creeping things and other extraneous bodies, as fleas and the like, ſhould be ſtayed in theſe windings and turnings of the waies, the glutinous thickneſs of the cholerick excrement or ear-wax hereunto alſo conducing, which the brain purges and ſends forth into this part, that is, the auditory paſſage framed into theſe intricate Mæanders.

For what uſe the ear-wax ſerves.

But that we may underſtand how the hearing is made, we muſt know the ſtructure of the organ or inſtrument hereof. The membrane which we formerly mentioned to conſiſt of the auditory nerve, is ſtretched in the inſide over the auditory paſſage like as the head of a Drum. For it is ſtretched and extended with the air, or auditory ſpirit implanted there, and ſhut up in the cavity of the mamillary proceſſe and *foramen cæcum*, that ſmitten upon by the touch of the externall air entring in, it may receive the object, that is, the ſound, which is nothing elſe then a certain quality ariſing from the air beaten or moved by the colliſion and conflict of one or more bodies.

For what uſe the membrane ſtretched under the auditory paſſage ſerves.

What ſound is.

Such a colliſion is ſpred over the air, as the water which by the gliding touch of a ſtone produces many circles and rings one as it were riſing from another. So in rivelets running in a narrow channel, the water ſtrucken, and as it were, beaten back in its courſe againſt broken, craggy and ſteep rocks, wheels about into many turnings: this colliſion of the beaten air flying back divers waies from arched and hollow roofed places, as Dens, Ciſterns, Wells, thick Woods and the like, yeelds and produces a double ſound, and this reduplication is called an Echo. Wherefore the hearing is thus made by the air, as a medium, but this air is twofold, that is, externall and internall.

The cauſe of an echo.

The exteriour is that which encompaſſes us, but the interiour is that which is ſhut up in the cavity of the mamillary proceſſe and *foramen cæcum*, which truly is not pure and ſole air, but tempered and mixed with the auditory ſpirit. Thence proceeds the noiſe or beating of the ears, when vapors are there mixed with the air inſtead of ſpirits, whereby their motion is perturbed and confuſed. But neither do theſe ſuffice for hearing, for nature for the more exact diſtinction of ſounds hath alſo made the little bones, of which one is called the *Incus* or anvill, another the *Malleolus* or hammer, the third the *Stapes* or ſtirrop, becauſe the ſhape thereof reſembles a German ſtirrop. Alſo it may be called *Deltoides*, becauſe it is made in the ſhape of the Greek letter Δ.

The 3 bones of the auditory paſſage.

They are placed behind the membrane; wherefore the anvill and hammer moved by the force of the entrance of the externall air, and beating thereof againſt that membrane, they more diſtinctly expreſſe the difference of ſounds, as ſtrings ſtretched within under the head of a Drum; as for example, theſe bones being more gently moved repreſent a low ſound to the common ſenſe and faculty of hearing, but being moved more vehemently and violently, they preſent a quick and great ſound; to conclude, according to their divers agitation, they produce divers and different ſounds.

Their uſe.

Whence the difference of ſounds.

The Glandules ſhould follow the Ears in the order of Anatomy, as well thoſe which are called the emunctories of the brain, that is, the *Parotides*, (which are placed as it were at the lower part of the ears) as theſe which lye under the lower Jaw, the muſcles of the bone *Hyoides* and the tongue, in which the *Scrophulæ* and other ſuch cold abſceſſes breed. It ſhall here ſuffice to ſet down the uſe of all ſuch like Glandules.

Therefore the *Parotides* are framed in that place by nature, to receive the virulent and malign matter ſent forth by the ſtrength of the brain, by the veins and arteries ſpred over that place. The reſt ſerve to ſtrengthen the diviſion of the veſſels, to moiſten the ligaments and membranes of the Jaw, leſt they ſhould be dryed by their continuall motion. Their other conditions and uſes are formerly handled in our firſt book of Anatomy.

## CHAP. XI.

### *Of the bone* Hyoides, *and the Muſcles thereof.*

THe ſubſtance of the bone *Hyoides* is the ſame with that of other bones. The figure thereof imitates the greek letter υ from whence it took the name, (as alſo the name ὑψιλοειδὲς; and from the letter λ it is in like ſort called λαμβδοειδὲς; by ſome it is ſtiled *os Gutturis* and *os Linguæ*, that is, the Throat-bone and Tongue bone. The compoſition thereof conſiſts of many bones joined into one by the interpoſition of griſtles.

The reaſon of the name.

The compoſition.

This bone is bigger in beaſts and compoſed of more bones, and that not only by the intercourſe of griſtles, but alſo of liganents. It is ſeated with its baſis (being gibbous on the

The fite.

forepart for conſtancy, and arched on the inſide that it might receive and contain the root of the tongue) upon the upper part of that griſtle of the throtle which is called *ſcutiformis* or Shield-like, (for this ſeems to prop it up by the ſtrength of two proceſſes riſing at the baſis thereof) and the root of the tongue. From this baſis it ſends forth two horns to the ſides of the tongue on each ſide one, which in men are tyed to the Appendix *ſtyloides* by ligaments ſent from it ſelf. Contrary then it is in beaſts, who have it of many bones united as we ſaid, by the intercouſe of ligaments even to the root of the *ſtyloides*. Wherefore this bone hath connexion with the forementioned parts, and other hereafter to be mentioned. It hath the ſame temper ac other bones have. The uſe of it is, to miniſter ligaments to certain muſcles of the tongue, and inſertion as well to the two foremoſt and upper muſcles of the throtle, as to its own, of which we will now treat.

The temper and uſe.

The muſcles of the bone *Hyoides*.

The muſcles of the bone *Hyoides*, according to the opinion of ſome are eight, on each ſide four; of which there be two, one of which *Galen* refers to the common muſcles of the *larinx* or throtle; and the other to thoſe which move the ſhoulder-blade upwards. Howſoever it be, the firſt of the four before mentioned ariſes from the Appendix *Styloides*, and paſſing over the nervous ſubſtance of the muſcle opening the lower jaw, is inſerted into the horns of the bone *Hyoides*. This muſcle is very thin, yet ſomewhat broad, the which in that reſpect may eaſily be cut, unleſſe you have a care in ſeparating the muſcle which opens the lower Chap. The ſecond aſcends obliquely from the upper part of the ſhoulder-blade neer the production thereof called *Coracoides*, to the beginnings of the horns of the ſaid bone *Hyoides*. This is round and nervous in the midſt that ſo it might be the ſtronger, as that is which we formerly ſaid opens the lower jaw; and it is refer'd by *Galen* amongſt thoſe which move the ſhoulder-blade upwards. The third ariſes from the upper part of the *ſternon*, and is inſerted at the root and baſis of the bone *Hyoides*; yet *Galen* refers it to the common muſcles of the *Larinx*; whoſe opinion takes place rather in beaſts, than in man, ſeeing in man this muſcle cannot be found either to proceed, or be inſerted into the throtle, as it is in beaſts. The fourth and laſt deſcends within from the chin to the root of the bone *Hyoides*. The firſt of theſe muſcles with its companion or partner moves the bone *Hyoides* upwards, the ſecond downwards; the third backwards; and the fourth forwards. I would declare whence theſe muſcles have their veſſels, had I not abundantly ſatisfied that thing, when I treated of the diſtribution of the nerves, veins and arteries.

The action of theſe muſcles.

## CHAP. XII.

### *Of the Tongue.*

What kind of fleſh the tongue hath.

THE tongue is of a fleſhy, rare, looſe and ſoft ſubſtance; it enjoyes fleſh of a different kind from the reſt of the fleſh, as chiefly appears when you cut it from the firſt originall of the muſcles thereof; which thing hath moved ſome, that they have made a fourth kind of fleſh proper to the tongue and different from the reſt, *viz.* the fibrous, muſculous, and that of the bowells. The quantity thereof is ſuch that it may be contained in the mouth, and eaſily moved to each part thereof. The figure of it is triangular, which it rather expreſſes in the baſis, which is at the root of the bone *Hyoides*, than in its point, or forepart, where from a triangle it becomes more dilated. It is compoſed of a membrane (which it hath from that which lines all the inſide of the mouth) muſcles 4. nerves two on each ſide, the one whereof is ſent from the third conjugation, into the coat thereof; the other from the ſeventh is ſent into the muſculous ſubſtance even to the end thereof for motions ſake; ſo that thoſe ſenſifick nerves from the third conjugation only give to judg of taſtes, compoſe the coat, and touch or enter not the fleſh. Beſides it is compoſed of veins and arteries on each ſide one, which it receives from the externall Jugular and *Carotides*, running manifeſtly to the end thereof on the lower ſide, that ſo they might be eaſily opened in the diſeaſes of the mouth and throtle; they commonly term theſe the *Venæ nigræ* or black veins.

The quantity.

The figure.

Compoſure.

The nerves.

The muſcles of the tongue.

The muſcles of the tongue, are abſolutely ten, on each ſide five. The firſt narrow at the beginning and broader at the end, deſcends into the upper ſide of the tongue from the Appendix *Styloides*, and together with its copartner draws it upwards. The ſecond hath its originall within from the lower jaw, about the region of the grinding-teeth, and is inſerted into the lower ſide of the tongue, the which with its partner draws it downward. The third proceeds from the inner part of the chin, and goes to the root of the tongne, that when need requires it may put it forth of the mouth. The fourth the greateſt and broadeſt of them all, compoſed of all ſorts of fibers, paſſes forth from the baſis of the bone *Hyoides*, and ends at the lower part of the tongue, which with its companion plucks it back into the mouth. The fift and laſt moſt uſually ariſes from the upper part of the horns of the bone *Hyoides*, and goes to the roots of the tongue between the two firſt, that it may move it to the ſides of the mouth.

mouth. The temper thereof, as of all other fleſh, is hot and moiſt. The firſt action and commodity thereof is, to be the organ of the ſenſe of taſting, wherefore it was made fungous and ſpongy, that by reaſon of the rarity of it, it might more eaſily admit the taſts conjoyned with the ſpettle, as a vehicle. Another to be an inſtrument to diſtinguiſh the voice by articulate ſpeeech, for which it was made movable into each part of the mouth. The third is to be a help to chaw and ſwallow the meat. For which cauſe it is like a ſcoop or diſh with which we throw back the corn into the mill, which hath ſcaped grinding. And becauſe, when the tongue is dry, it is leſs nimble and quick to perform its motions, as appears by thoſe which can ſcarce ſpeak by reaſon of thirſt or a burning Feaver: therefore nature hath placed very ſpongy glandules at the roots thereof, on each ſide one, which like ſponges ſuck and receive, both from the brain and other places, a wateriſh and ſpettlely humor, with which they humect and make more glib, not only the tongue, but alſo the other parts of the mouth, as the throat and jawes; theſe glandules are called the *Tonſillæ*, or Almonds of the throat.

The temper, action, and manifold uſe of the tongue.

The uſe of the glandules placed at the roots of the tongue.

## CHAP. III.

### *Of the Mouth.*

THe mouth is that capacity which bounded with the cheeks and lips contains within its precincts the teeth, tongue, and the beginnings of the throtle and gullet. Therefore the uſe of the mouth is to contain the tongue, and ſerve it in the fitter performance of its actions; and although many parts hereof have been formerly handled, as the lips, teeth, jawes, tongue, almonds, and paſſages of the palat coming from the noſe, yet it remains, that we declare what the palat, the *Gargareon*, or Vvulva, the *Pharinx*, and *fauces* or Chops are. The Palat (or as it is commonly called, the Roof of the mouth) is nothing elſe but the upper part of the mouth bounded with the teeth gums and upper Jaw. In which place the coat common to the whole mouth, is made rough with divers wrincles, that the meats put up and down between the tongue and the Palat might be broken and chawed more eaſily by that inequality and roughneſs. If any would find the nerves, which deſcend into the palat from the fourth conjugation, let him ſeparate that coat and caſt it from the fore to the hind part of the mouth; for ſo he ſhall find them at the ſides and hind parts of the bones of the Palat, which incompaſs the Palat, and at the beginning of the inner holes of the mouth, which deſcend from the noſe, and region of the productions of the wedgbone called the Saddle. Theſe holes or paſſages are open, that we may breath the better when we ſleep, and that when the noſe is not well, the excrements which ſeek their paſſage by it, may be eaſilier drawn away by the mouth. This ſame coat is woven with nervous fibers, that like the tongue it might judg of taſts; theſe fibers compoſe a coat that hath a middle conſiſtence betwixt ſoft and hard. For if it ſhould have been any harder, like a bone or griſtle, it would have been without ſenſe, but if ſofter, hard, acrid and ſharp meats would have hurt it.

What it is.

The uſe.

What the palat is.

The nervrs thereof.

Why the holes of the palat are open.

What kind of coat the palat hath.

## CHAP. XIII.

### *Of the* Gargareon, *or Vvula.*

BY the *Gargareon* we underſtand a fleſhy and ſpongy body, in ſhape like a pine apple, hanging directly down at the further end of the palat and baſis of the bone *Ethmoides*, where the two holes of the palat come from the noſe, above the entrance of the throtle. This little body is ſituate in this place to break the violence of the air drawn in by breathing, and that by delay it might in ſome ſort temper and mitigate it by the warmneſs of the mouth. Beſides, that it might be as it were the *Plectrum*, or quil of the voice, ſo to diffuſe the fuliginous vapour ſent forth in breathing, that it may be diſperſed over all the mouth, that reſounding from thence it may be articulate, and by the motion of the tongue diſtinguiſhed and formed into a certain voice. Which uſe is not ſmall, when we ſee by experience that ſuch as have this particle cut away, or eaten, or corrupted by any accident, have not only their voyce vitiated and depraved, but ſpeak ill-favouredly, and as they ſay, through the noſe; and beſides in proceſs of time they fall into a conſumption by reaſon of the cold air paſſing down before it be qualified. This ſame particle, is alſo a means to hinder the duſt from flying down through the weazon into the Lungs. By the *Pharinx* and *fauces* is meant the inner and back part of the mouth, ſet or placed before the entrance of the Throtle and Gullet; being ſo called, becauſe that place is narrow and ſtrait, that as it were by theſe ſtraits, the air drawn in by the mouth might be forced down by the Throtle, and the meat into the Gullet.

What the *Gargareon*, or Vvula is.

The ſite and manifold uſe thereof.

The diſcommodities that enſue the loſs of the Vvula.

What the *Pharinx* and *fauces* are.

## CHAP. XV.

### *Of the* Larinx, *or Throttle.*

What is meant by the *Larinx.*

FIrſt we muſt ſhew what is meant by the *Larinx* and Throttle,then proſecute the other conditions of it after our accuſtomed manner. Therefore by the *Larinx* we underſtand nothing elſe in this place,than the head & extremity of the rough artery, or weazon,which comes neerer to griſtly ſubſtance,than to any other. The quantity thereof is ſufficiently large, yet divers according to the diverſity of bodies. It reſembles in ſhape the head of a *Germane* pipe. The compoſure of it conſiſts of 18. muſcles,on each ſide nine,which as they are like in quantity, ſo alſo in ſtrength and action; of three griſtles,veins,arteries and nerves, as we ſhewed, when we ſpoke of the diſtribution of the veſſels; as alſo of a double coat, the one externall,the other internall, as we ſhewed when we ſpoke of the weazon. Theſe three griſtles are joyned together by certain Ligaments and muſcles;the foremoſt griſtle,which alſo is the greater,is called by the Greeks θυρεοειδὴς, in Latin commonly *Scutiformis*,that is ſhield-like,becauſe it reſembles a ſhield. The ſecond being the hinder and middle in magnitude,wants a name,wherefore it is called the *innominata* or nameleſs griſtle. The laſt and leaſt, which notwithſtanding may be parted into two, ſo lyes upon the edges of the other,that it reſembles the mouth of an oyl pot, or a pitcher, whereupon the Greeks call it *Arytenoides*.Theſe griſtles thus fitted amongſt themſelves utter a diſtinct voice, by the benefit of the *Epiglottis*, or After-tongue; and alſo of the muſcles opening and ſhutting,dilating and compreſſing them, whence proceed infinite varieties of voices. For thus when they are opened and dilated,they yeeld a heavy,or dull ſound;when they are ſhut or drawn together,a quick,or ſharp ſound;and to conclude, they make it infinite wayes different according to the infinite variety of the dilatation, or conſtriction thereof. Therefore becauſe it was fit theſe griſtles ſhould be moveable, eſpecially the *Arytenoides*, and *Thyroides*, nature hath put to them on each ſide 9 muſcles, of which three are common,and ſix proper.The firſt of the common lying hid under the third muſcle of them that move the bone *Hyoides*, ariſes from the root of the ſame bone,and by an oblique deſcent inſerts it ſelf at the baſis of the ſhield-like griſtle, to dilate it upwards and downwards. The ſecond aſcends obliquely from the inner part of the *ſternon* according to the length of the weazon (whence it is called *Bronchius*) to the bottom and ſides of the ſame ſhield-like griſtle,that it may open and dilate it with its wings.This muſcle is ſeen from the firſt original thereof,even a great part of the way ſtraitly to cohere with the third muſcle of the bone *Hyoides*;therefore under each of the muſcles,there is a glandulous body ſpred about the fore and upper part of the weazon, on that place where it applies it ſelf to the throttle; this body although it reſemble a fleſhy ſubſtance, yet it is a glandule,which being pluckt away by a certain Emperick taking upon him to cure the kings evill, cauſed a defect of voice on one ſide, becauſe he pulled away the recurrent nerve lying upon the glandule as it goes to the throttle, as *Galen* reports, *Lib. de locis affectis*. The third and laſt ariſes from the parts of the *Vertebra's* of the neck lying tranſverſly upon the ſides of the gullet,and ends at the wings and ſides of the ſhield-like griſtle, that it may tye it more ſtraitly to the ſecond griſtle. But theſe three are called common muſcles, becauſe they take their originall from ſome other place than the throttle,that ſo they may be inſerted into ſome part thereof; for they are called the proper muſcles which ariſe from the Throttle it ſelf,which we have ſaid to be ſix on each ſide:the firſt of which ariſing from the fore part of the ſecond griſtle,makes a circle under the baſis of the ſhieldlike griſtle;whilſt aſcending obliquely to the baſis thereof, it is afterwards inſerted in a part of it,ſo to ſtrengthen and dilate it. The ſecond in like manner ariſing from the ſecond griſtle, from that place where it adheres to the firſt, it runs obliquely croſſing the firſt to the inner and forepart of the griſtle *Thyroides* neer to the baſis thereof,that it may joyn it to the ſecond.The third from the hind baſis of the ſecond griſtle aſcends directly to the baſis of the third griſtle *Arytenoides*, that with the ſecond muſcle it may open and ſhut it. The fourth aſcends from the ſides of the ſecond griſtle,neer the originall of the ſecond muſcle, to the ſides of the *Arytenoides*, that with the ſecond muſcle it may open and ſhut it.The fift ariſes from the inner middle of the ſhield-griſtle, and ends in the fore-part of the *Arytenoides* at the inſertion of the fourth muſcle, that ſo it may preſs down the ſaid griſtle.

The magnitude,figure, and compoſur.

The deſcription of the 3 griſtles of the *Larinx.*

Whence the infinite variety of voices proceed.

The muſcles of the *Larinx.* Their number.

A notable hiſtory.

Whence the muſcles of the Throttle have their nerves.

The ſixt and laſt aſcends by the hind baſis of the *Arytenoides* to the fore baſis of the ſame, to preſs it down. But you muſt note,that all ſuch muſcles as ariſe from below upwards,receive branches from the recurrent, but eſpecially thoſe who open and ſhut the griſtle *Arytenoides*. But the ſite,temper,connexion,and uſe of the throttle may eaſily be known by that we have ſaid before: Although it be a thing very full of difficulty to ſearch out and demonſtrate all the conditions of the organicall parts, by reaſon of the diverſity of their compoſition. Wherefore hence-forward concerning the ſubſtance, temper, and other circumſtances of ſuch parts as we ſhall omit, you may have recourſe to thoſe things which we have written in the Demonſtration of the ſimple and ſimilar parts, of which theſe organicall

nicall are compoſed; as if any ſhould ask of what temper the *Larinx* is, you ſhall anſwer, of a cold, dry, and hot, and moiſt, becauſe it conſiſts both of a griſtly and fleſhly ſubſtance. He which reckons up all the parts of the mouth, muſt not omit that griſtly and membranous body which ariſes from the roots of the tongue, which that it might be more quick for motion, that is, whereby it might be more eaſily erected and depreſſed (for thoſe things which are more ſoft do continually ſlide away, but thoſe which are too hard cannot be bended) it was convenient it ſhould be neither too hard nor too ſoft, that it might be erected whileſt we breath, but depreſſed when we ſwallow. It is a principall inſtrument of the voice, for it cannot be well articulated unleſs the way were ſtrait. Therefore it ſtraitens that way, and the paſſage of the griſtles of the throttle, but ſpecially the *Arytenoides*; it is alwayes moiſt by a certain native, and inbred humidity; wherefore if it happen to be dried by a feaver, or any other like accident, the ſpeech is taken away. It is bound on both ſides by the common membrane of the mouth to the ſides of the *Arytenoides* even to the back part thereof, that ſo like a cover it may open and ſhut the orifice of the throttle, that none of the meat and drink in ſwallowing may fall into the weazon, in ſuch aboundance as may hinder the egreſs and regreſs of the air. For we moſt not think that this body doth ſo cloſely ſhut the orifice of the throttle, but that ſome ſmall quantity of moiſture alwaies runs down by the inner ſides, as the walls thereof, to moiſten the lungs; otherwiſe *Eclegma's* ſhould be of no uſe in the diſeaſes of the Cheſt. And becauſe that this little body is partaker of voluntary motion, therefore according to the opinion of ſome there are four muſcles beſtowed upon it, two which may open it and two that ſhut it, on each ſide one. The opening muſcles deſcend from the root of the bone *Hyoides*, and in their inſertion growing into one they are terminated in the root of this body, that is, the *Epiglottis* in the back part thereof. The ſhutting muſcles (in thoſe creatures where they are found) ariſe on the inſide between the coat and griſtle thereof. Truly I could never obſerve and find theſe four muſcles in a man, though I have diligently and earneſtly ſought for them, but I have alwayes obſerved them in beaſts. Therefore ſome have boldly affirmed that this little body in ſwallowing lies not upon the orifice of the Throttle, unleſs when it is preſſed down by the heavineſs of ſuch things as are to be ſwallowed; but that at all other times by reaſon of the continuall breathing it ſtands upright, the Throttle being open. There remain as yet to be conſidered, two ſmall boſomes, or cavities, or rather fiſſures, which nature hath hollowed in the very throttle under the *Epiglottis*, on each ſide one, that if by chance any of the meat or drink ſhould fall, or ſlip aſide in the *Larinx*, it might be there ſtayed and retained. Beſide that, the Air too violently entring, ſhould be in ſome ſort broken by theſe clifts, or chinks, no otherwiſe then the blood and ſpirit entring into the heart through the *Auriculæ* or Ears thereof.

The *Epiglottis*, or After-tongue.

Of potable things ſome what alwayes falls upon the Lungs.

The muſcles of the *Epiglottis*.

The uſe of the cavities or fiſſures of the Throttle.

## CHAP. XVI.

### *Of the Neck and the parts thereof.*

FIrſt we will define what the Neck is, then proſecute the parts thereof as well proper, as common, eſpecially thoſe of which we have not as yet treated. For it were ſuperfluous to ſpeak any more of the ſkin, the fleſhy pannicle, the veins, arteries, nerves, gullet, weazon and muſcles aſcending and deſcending to the parts into which they are inſerted alongſt the neck; wherefore you muſt not expect that we ſhould ſay any thing of the neck, more than to deſcribe the *Vertebra* or rack bones, being the proper parts thereof, and the ligaments as well thoſe proper to the neck, as thoſe which it hath in common with the head; and laſtly the muſcles as well thoſe it hath in common with the head and cheſt, as thoſe of its own. Therefore the neck is nothing elſe, then a part of the head, which is contained between the nowl bone and the firſt *vertebra* of the back. Firſt in the neck the *Vertebra's* muſt be conſidered, and we muſt ſhew what they have proper and peculiar, and what common amongſt themſelves, that we may the more eaſily ſhew the originall and inſertion of the muſcles growing out of them and ending in them. The neck conſiſts of ſeven *Vertebræ* or Rack-bones, in which you muſt conſider their proper body; and then the holes by which the ſpinall marrow paſſes; thirdly the *Apophyſes* or proceſſes of the *Vertebræ*; fourthly the holes through which the nerves are diſſeminated into other parts from the ſpinall marrow, and beſides the perforations of the tranſverſe productions by which the veins, and arteries, which we call *Cervicales*, aſcend alongſt the neck, and laſtly the connexion of theſe ſame *vertebræ* or Rack-bones. For the firſt, by the body of the *vertebra*, we underſtand the forepart thereof upon which the gullet lies. For the hole, that is not alwayes the largeſt in thoſe *vertebræ* which are nigheſt the head; but it is alwayes encompaſſed with the body of the *vertebræ*, and beſides with three ſorts of proceſſes, except in the firſt Rack-bone, that is right, tranſverſe and oblique. By right we underſtand theſe extuberancies in the rack-bones of the neck which are hollowed directly in the upper part of them, and riſe up creſted on each ſide to ſuſtain and receive the baſis of the Rack-bone which is ſet upon it. By the oblique proceſſes we underſtand the bunchings out

What the neck is.

What to be conſidered in the *vertebræ* of the neck.

Which be the right proceſs of the *vertebræ* Which the oblique.

out by which theſe Rack-bones are mutually knit together by *Ginglymos*; theſe are ſeated between the right and tranſverſe proceſſes. By the tranſverſe we underſtand the protuberations next the body, which divide the *vertebra* or Rack-bone in a ſtraight line. Theſe proceſſes are perforated that they may give way to the before deſcribed veins and arteries, which entring the Spinall marrow by the holes of the nerves nouriſh the Rack-bones and parts belonging to them. Beſides you muſt note that the perforations of the Rack-bones of the neck, by which the nerves proceed from the ſpinall marrow to the outward parts, are under the tranſverſe proceſs, that is growing or made by the upper and lower *vertebra*, contrary to all the other which are in the reſt of the Rack-bones. For the connexion of the Rack-bones, you muſt know that all the *vertebræ* of the ſpine have ſix connexions, two in their own bodies, & four in their oblique proceſſes. By the two firſt connexions they are ſo mutually articulated in their own bodies that each are joyned with other both above and below. But by the four other by their oblique aſcendent & deſcendent proceſſes on each ſide two, they are ſo mutually inarticulate, that as the fourth Rack-bone of the neck by its oblique aſcendent proceſſes, is received of the deſcendent proceſſes of the third rack-bone; ſo it receives the oblique aſcendent proceſſes of the firſt, by its oblique deſcendents, for alwayes the oblique aſcendents are received, and the deſcendents receive. Yet we muſt except the firſt Rack-bone of the neck which is contained with four connexions by his lower oblique proceſſes, and by its upper by which it receives the oblique proceſſes both of the nowl-bone, and of the ſecond Rack-bone. The ſecond *vertebra* or Rack-bone muſt alſo be excepted which is holden by five connexions, that is to ſay, four by its oblique proceſſes, and the fift by its own body, by which it is knit to the body of the third *vertebra*. But we muſt note, that whereas nature hath not given a Spine to the firſt Rack-bone, yet it hath given it a certain bunch or extuberancy in ſte ad thereof; in like manner, ſeeing it makes no common paſſage with the ſecond *Vertebra* for the paſſing forth of the nerve, it is perforated at the ſides of its body, and it is made very thin on the foreſide, as if it were without body, that it might receive the fore proceſs raiſed in the upper body of the ſecond Rack-bone, which *Hippocrates* calls the tooth, to which the principall Ligament of the head is faſtened, which deſcends within from the hind part of the head under the *Apophyſes clinoides* or proceſſes of the wedg-bone.

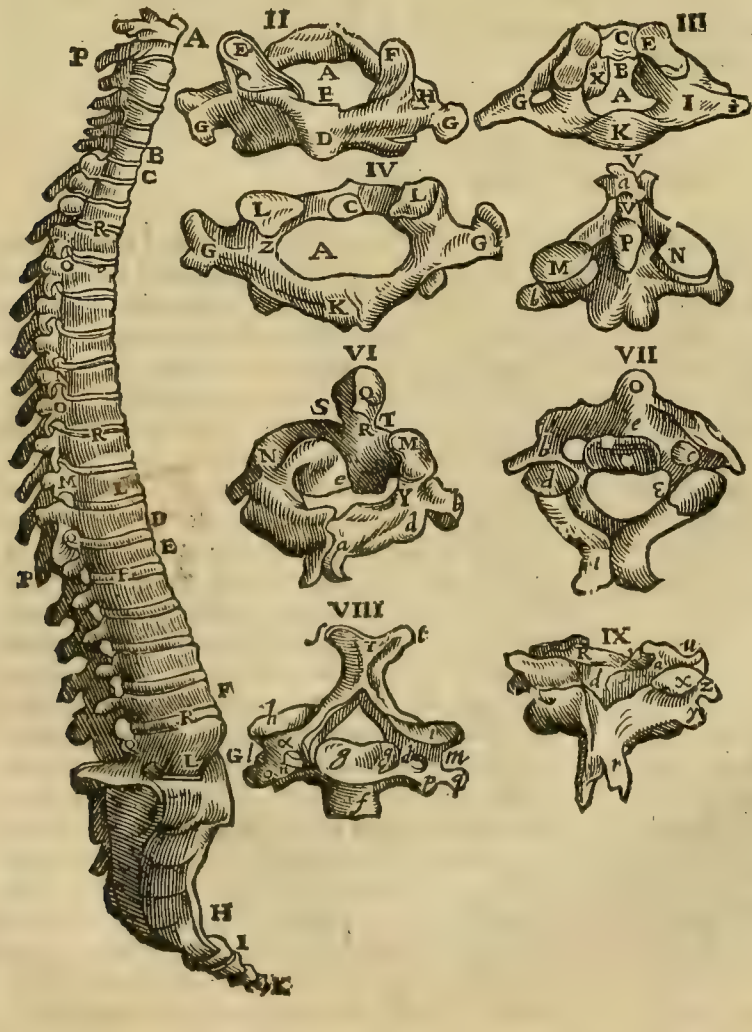
Which the tranſverſe.

The connexions of the *vertebræ* of the neck.

The proceſs called the tooth.

*Table 20. Figure 1. Sheweth all the Rack-bones of the back knit together.*
*Figure 2. Sheweth the fore and upper face of the neck, &c. See D.* Crook, pag. 398.

*FIG. I*




From *A*, to *B*, the ſeven *vertebres* of the neck.
From *C*, to *D*, the twelve *vertebres* of the cheſt.
From *E*, to *F*, the five rack-bones of the Loines.
From *G*, to *H*, the *Os ſacrum*, or Holy-bone conſiſting, commonly of 6. *vertebræ*.
From *I*, to *K*, the bone *Coccyx* or the rump-bone according to the late writers.
*LL*, the bodies of the *vertebræ*.
*M*, the tranſverſe proceſſes of the *vertebræ*.
*N*, the deſcendent proceſſes.
*OO*, the aſcendent proceſſes.
*PP*, the backward proceſſes.
*QQ*, the holes that are in the ſides of the *vertebræ* through which the nerves are tranſmitted.
*RR*, A griſtly Ligament betwixt the *vertebræ*.
*A*, 2, 3, 4, the hole whereout the marrow of the back iſſueth.
*B*, 2, 3, The cavity which admitteth the root of the ſecond rack-bone.
*C*, 3. 4, a cavity or *Sinus* in the ſame place cruſted over with a griſtle.
*D*, 2, a prominence in the outward region of this *Sinus*.
*EF*, 2, 3, the *Sinus* or cavity of the firſt rack-bone which admitteth the 2. heads of the nowl-bone.
*GG*, 2, 3, 4, the tranſverſe proceſs of the 1. *Vertebra*.
*H*, 1, the hole of this tranſverſe proceſs.

*I*, 3, the *Sinus* which together with the cavity of the nowl-bone marked with *E*, maketh a common passage prepared for the nerves.
*K*, 3, 4, a rough place where the spine of the first rack is wanting.
*LL*, 4, two cavities of the first rack receiving the 2. bunches of the second rack marked with *MN*.
*MN*, 5, 6, the 2. bunches of the second rack which fall into the cavities of the first. *O*, 7, the appendix or tooth of the second rack. *P*, 5, a knub of this appendix crusted over with a gristle. *Q*, 6, the backside of the tooth. *R*, 6, the *Sinus* or cavity of the same, about which a transverse Ligament is rowled containing the said tooth in the cavity of the first rack. *ST*. 6, Certain cavities at the sides of the tooth whence the roots issue of the forebranch of the second pair of sinews. *V*, 5, the point of the the tooth. *X*, 3, an asperity or roughness where is a hole but not thrilled through. *Y*, 6, a cavity of the second rack which together with the cavity marked with Z, maketh a hole through which the nerves do issue. Z, 4, the *Sinus* of the first rack. *a*, 5, 6, 7, the double spine of the second rack. *b*, 5, 6, 7, the transverse process of the second rack. *c*, 7, the hole of the said transverse process. *d*, 6, 7, the descending process of the second rack whose cavity is marked with *d*, in the 6. figure. *e*, 6, 7, the place where the body of the second rack descendeth downward. *f*, *gg*, 8, the lower side of the body of the third rack at *f*, the two eminent parts of the same at *gg*. *h i*, 8, the ascending processes. *l m*, 8, the two descending processes. *n o p q*, 8, the transverse processes. *r*, 8, 9, the spine or backward process. *st*, 8, the two tops of the spine. *u*, 9, the descending process of the third rack. *x*, 9, the ascending process. *y*, the transverse process of the third rack. *α*, 8, 9, the hole of this transverse process. *β*, 9, the upper hollowed part of the body of the third rack. *δ*, 9, the *Sinus* or cavity which maketh the lower part of a hole through which the conjugations of the nerves are led. *ε*, 7, the upper part of the same hole.

And by this articulation the head is bended forwards and backwards, as it is moved to the sides by the articulation of the first Rack-bone with the second. That process is bound by two Ligaments, the first of which being greater and broader is externall, comprehending in the compass thereof all the upper articulation, ascending from the rack-bones to the head, or rather descending from the head to them, as any other Ligament going from one bone to another; The other is the stronger and also incompasses the articulation mixing its self with the gristle, which by its interposition binds together all the Rack-bones, the first excepted, as you may see in pulling asunder the Rack-bones of a Swine; and the whole Spine or Back-bone is tyed together and composed throughout with such Ligaments.

By what articulation the head is bended backwards and forwards.

The Holy bone is composed of 4. *Vertebræ* (or rather of five, or six, as in the figure following) besides the Rump-bone, it receives, and holds fast the *Ossa Ilium*, or Hanch-bones, and is as a Basis to all the Rack-bones placed above it, whereby it comes to pass that the Rack-bones from the Head to the Holy-bone grow still thicker, because that which supports ought to bigger than that which is supported. There is a certain moisture, tough and fatty, put between the Rack-bones, as also in other joynts, to make them glib and slippery, that so they may the better move. Whilst this motion is made, the Rack-bones part one from another.

The *Vertebræ* of the Holy bone.

The commodities or uses of the Spine are said to be four. The first is, that it is, as it were, the seat and foundation of the composure and construction of the whole body, as the Carkass is in a ship. The second, that it is a way or passage for the marrow. The third is, because it contains and preserves the same. The fourth is, that it serves for a wall or bulwark to the entrails, which lye and rest upon it on the inside. And because we have fallen into mention of Ligaments, it will not be amiss to insert in this place, that which ought to be known of them. First, therefore, we will declare what a Ligament is, then explain the divers acceptions thereof, and lastly prosecute their differences.

The manifold uses of the Backbone.

Therefore a Ligament is nothing else than a simple part of mans body, next to a bone and Gristle the most terrestriall, and which most usually arises from the one or other of them either mediately or immediately, and in the like manner ends in one of them, or in a Muscle, or in some other part; whereby it comes to pass that a Ligament is without blood, dry, hard, cold, and without sense, like the parts from whence it arises, although it resemble a Nerve in whiteness and consistence, but that it is somewhat harder.

What a Ligament is.

Why it is without sense.

A Ligament is taken either generally or more particularly; in generall, for every part of the body, which tyes one part to another, in which sense the skin may be called a Ligament, because it contains all the inner parts in one union. So the *Peritonæum* comprehending all the naturall parts, and binding them to the back-bone: so the membrane investing the Ribs, (that is, the *Pleura*) containing all the vitall parts; thus the membranes of the brain, the nerves, veins, arteries, muscles, membranes, and lastly all such parts of the body, which bind together and contain other, may be called Ligaments, because they bind one part to another; as the nerves annex the whole body to the brain, the Arteries fasten it to the heart, and the veins to the liver. But to conclude, the name of a Ligament more particularly taken, signifies the part of the body, which we have described a little before.

What parts may be called Ligaments in a generall signification.

The differences of Ligaments are many, for some are membranous and thin; others broad, othersome thick and round, some hard, some soft, some great, some little, some wholly gristly, others of a middle consistence beeween a bone and a gristle, according to the nature of the motion of the parts, which they bind together in quickness, vehemency and slowness. We will shew the other differences of Ligaments, as they shall present themselves in dissection.

The differences of Ligaments properly so called.

CHAP.

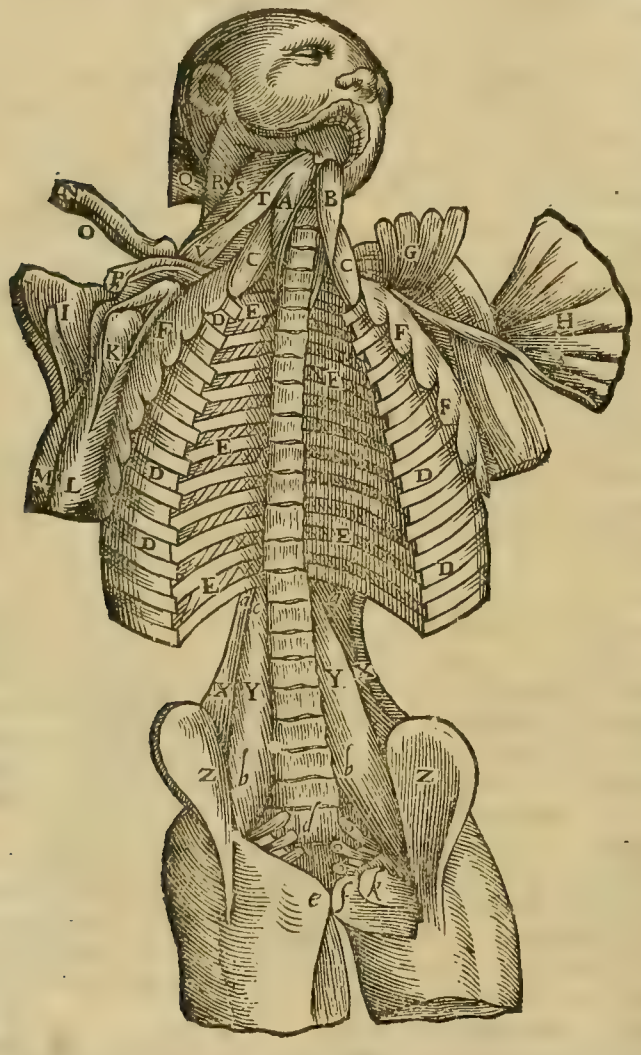
## CHAP. XVII.

### *Of the Muſcles of the Neck.*

Their number.

THe Muſcles of the neck as well proper as common, are in number twenty, or elſe twenty two, that is, ten, or eleven on each ſide; of which, ſeven only move the head, or the firſt *vertebra* with the head; the other three or four, the neck it ſelf. Of the ſeven which move the head, and with the head the firſt *Vertebra*, ſome extend and erect it, others bend and decline it, others move it obliquely, but all of them together in a ſucceſſive motion move it circularly, and the like judgment may be of the Muſcles of the Neck.

*The fourth Figure of the Muſcles. This Figure ſheweth the cavities of the middle and lower bellies, the bowels being taken out, but moſt part of the bones and muſcles remaining.*




*AB.* The firſt muſcle bending the neck called *Longus.*

*CC.* The ſecond bender of the neck called *Scalenus.*

*DDDD.* The outward *intercoſtall* muſcles.

*E E E E,* The inner *intercoſtall* muſcles.

*F F F,* The ſecond muſcle of the cheſt called *ſerratus maior.*

*G,* The firſt muſcle of the ſhoulder-blade called *ſerratus minor,* ſeparated from his originall.

*H,* The firſt muſcle of the arm called *Pectoralis,* ſeparated from his originall.

*I.* The ſecond muſcle of the arm called *Deltoides.*

*K.* The bone of the arm without fleſh.

*L,* The firſt muſcle of the cubit callad *Biceps.*

*M.* The ſecond muſcle of the cubit called *Brachiæus.*

*N.* The clavicle or coller-bone bent backward.

*O.* The firſt muſcle of the cheſt called *ſubclavius.*

*P,* The upper proceſs of the ſhoulder-blade. *Q.* The firſt muſcle of the head called *obliquus inferior. R.* The ſecond muſcle of the head called *Complexus. S.* The fourth muſcle of the ſhoulder blade called *Levator. T V.* The two bellies of the fourth muſcle of the bone *Hyois. X X. a a.* The fift muſcle of the back whoſe originall is at *aa. YY. bb. cc.* The fixt muſcle of the thigh called *Pſoæ,* whoſe originall is at *c c.* and tendon at *b b. Z Z.* The ſeventh muſcle of the thigh. *d.* the holy bone. *o o o.* The holes of the holy bone, out of which the nerves do iſſue. *e.* A portion of the fifth muſcle of the thigh ariſing from the ſhare-bone. *f* the ſhare-bone bared. *k.* The ninth muſcle of the thigh or the firſt *circumactor.*

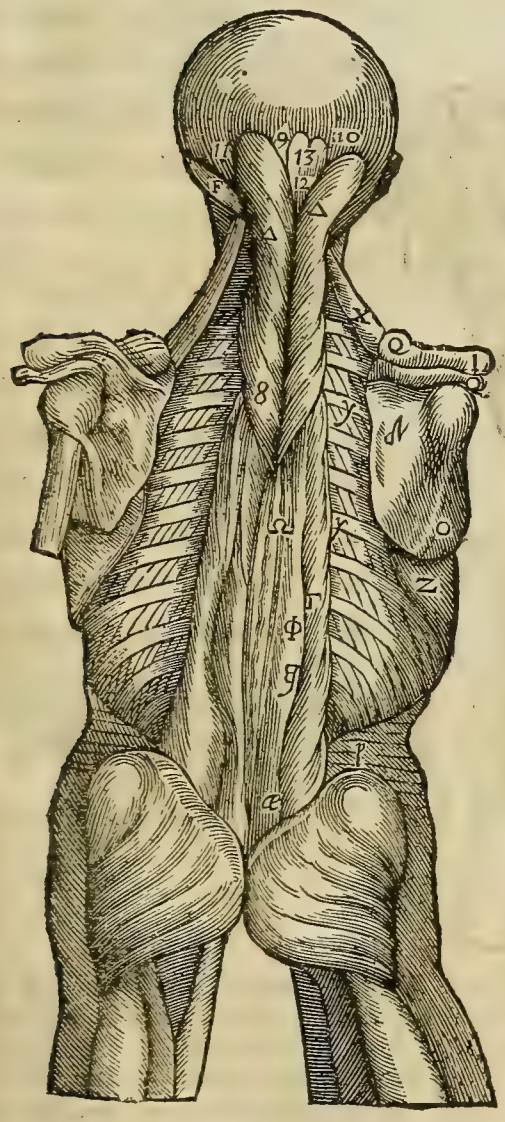
But before I can come to the deſcription of their originall and inſertion, I muſt admoniſh thee, that the 2 Muſcles of the ſhouder-blade muſt firſt be taken away by diſſection; that is, the *Trapezius,* or Table-muſcle, and the *Rhomboides,* or ſquare-muſcle; whoſe originall and inſertion that we may the better demonſtrate, (or rather the action by which we ſeek that originall and inſertion,) they muſt be pulled up, beginning at their inſertion, which is at the ſhoulder-blade (as ſhall be ſhewed in the proper place) turning them up towards their originall, that is, to the Spine. Beſides the leſs *Rhomboides,* the hinder, and upper (called alſo the *Dentatus* or toothed-muſcle) muſt be raiſed from its originall, which is at the three lower Rack-bones of the Neck and the firſt of the back, and turned up to its inſertion, which is at three ſpaces of the lower ribs nigh

nigh to the hind, and upper angle of the Shoulder-blade, as ſhall be ſhewed in fit place hereafter. Theſe muſcles thus raiſed up, the 4 muſcles which erect and extend the head muſt be taken away, and then thoſe two which move it obliquely, and laſtly one which bends, or declines, for thus anatomicall order requires. Yet if you think good, you may, not hurting the other, firſt of all cut away that which is called the *Maſtoides*, which declines or bends the head. For theſe 4, which lift up and extend the head, the firſt from the figure of the ſpleen is called the *Splenius*, it aſcends from the 5, upper ſpines of the back and the 4, lower of the neck, and is obliquely inſerted at the back part of the head and the mamillary proceſs, whence you may raiſe it towards its originall. The ſecond by reaſon of its compoſure is called *Complexus*; this paſſing from the third, fourth and fifth tranſverſe proceſs of the back and often from the firſt of the neck, aſcends directly to the back part of the head, incompaſſing the lower and ſide part of the neck, you may eaſily take it up; if you begin at the ſpine, and ſo go forwards to the tranſverſe proceſſes and mamillary proceſſes of the nowl-bone. This *Complexus* may be divided into two or three muſcles, but that with ſome difficulty, by

The *Splenius*.

The *Complexus*.

*The fifth Figure of the muſcles in which ſome muſcles of the Head, Cheſt, Arm, and ſhoulder-blade are deſcribed.*




*I.* The proceſs of the ſhoulder-blade, called the top of the ſhoulder.

*O.* The fourth muſcle of the arm or *the greater round muſcle*, to which *Fallopius* his right muſcle is adjoined, which ſome call the *leſſer round muſcle*.

*Q Q.* The ſixt muſcle of the arm or the upper *bade-rider*.

*X.* The ſecond muſcle of the ſhoulder-blade or the *Levator* or heaver.

*Z.* The ſecond muſcle of the cheſt or the *greater Saw-muſcle*.

*Y.* The fift muſcle of the cheſt or muſcle called *Sacrolumbus*.

*αβ.* His place wherein he cleaveth faſt to the longeſt muſcle of the back.

*γγ.* The tendons of the muſcle obliquely inſerted into the ribs.

*ΔΔ.* The firſt pair of the muſcles of the head or the Splinters.

*Ch.* 8. 9. Their length whoſe beginning at 8 and inſertion at 9.

10. 11. The ſides of this muſcle.

12. That diſtance where they depart one from the other.

13. The two muſcles called *Complexi*, near their inſertion.

*Φ.* The ſecond muſcle of the back or the *Longeſt* muſcle.

*Ω.* The fourth muſcle of the back or the *Semi-ſpinatus*.

*δ.* The ſhoulder-blade bare.

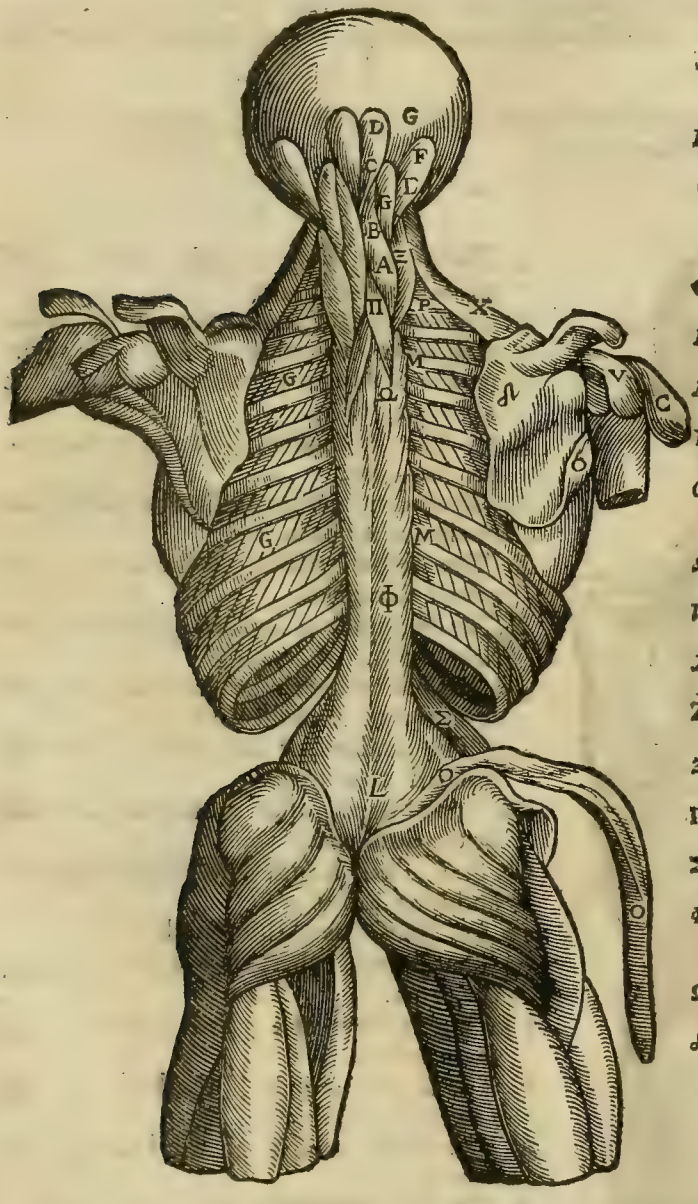
*p.* A part of the tranſverſe muſcle of the *Abdomen*.

reaſon of its folded texture. The third and fourth, which be two of the eight little muſcles, being four on each ſide, do aſcend ſomewhat obliquely, the firſt truly from the whole ſide of the ſecond *Vertebra*. The ſecond from the whole ſide of the proceſs of the firſt *Vertebra*, which it hath in ſtead of a ſpine; they aſcend to the back part of the head juſt againſt the ſpine; theſe two muſcles by the conſent of all Anatomiſts are called right, or direct muſcles, only moving the head: theſe truly muſt not be pluckt from the places of their originall, nor inſertion, but only bound by a ſtring put under them, that ſo they may be the more eaſily ſhewed. On each ſide follow two oblique muſcles, one whereof only moves the head; the other primarily the firſt *Vertebra*, but ſecondarily, and by

The Recti. or 2 right muſcles.

accident the head it ſelf. For the firſt, contrary to the opinion of ſome, it ariſes from the tranſverſe proceſs of the firſt rack-bone, and then is inſerted, above the inſertion of the firſt right muſcle: the which in like manner you muſt lift up, by ſomething put underneath it, but not ſeparate it. The other entring forth of the ſpine of the ſecond *Vertebra*, is inſerted at the proceſs of the firſt, contrary to the originall of the precedent, although ſome think otherwiſe. It will be convenient in the like manner only, to lift up this with a ſtring, and not pluck him from his place, that ſo you may ſee how all theſe make a perfect triangle. The action of this muſcle is contrary to the action of the precedent, as the contrariety of its originall and inſertion ſhew.

*The ſixth Figure of the muſcles, ſhewing ſome of the muſcles of the Head, Back, Cheſt, Shoulder-blade and Arm.*




*A D.* the ſecond pair of the muſcles of the head, or the two *Complexi*, the firſt part is at *A D.*

*B C.* the ſecond part *E F*, the third part riſing up under *G* and inſerted at *F.*

*G.* the fourth part of this muſcle or the right muſcle of the head according to *Fallopius*, which *Veſalius* made the 4 part of the 2.

*G G.* (Betwixt the ribs) the externall *Intercoſtall* muſcles.

*L.* the originall of the 2. muſcle of the back.

*M.* His tendons at the rack-bone of the neck.

The upper *O* the fourth muſcle of the arm or the *greater round* muſcle.

*OO.* the lower, the 6 muſcle of the cheſt, or the *Sacrolumbus* hanging from his originall.

*Q.* the ſixt muſcle of the arm or the upper *Bladerider* inverted.

*V.* the third ligament of the joynt of the arm.

*X.* the fourth muſcle of the ſhoulder-blade or the *heaver.*

*Z.* the ſecond muſcle of the Cheſt, or the greater *Saw muſcle.*

*Σ.* the three muſcles of the neck called *Tranſverſalis.*

Π. the 4. muſcle of the neck called *Spinatus.*

*Σ.* the firſt muſcle of the back, or the *Square muſcle.*

Φ. the 2. muſcle of the back or the *Longeſt*, whoſe originall is at *L* and his tendons at the *Vertebræ* at *M M.*

Ω. the fourth muſcle of the back called *Spinatus.*

δ. the back of the ſhoulder-blade flayed.

Which may be truly called the propet muſcle of the neck.

Wherefore when the firſt oblique moves the head obliquely forwards, the ſecond puls it back by the firſt *Vertebra*, this with his aſſociate of the other ſide, may be truly termed the proper muſcles of the neck, becauſe they belong to no other part; whereas it is contrary in other muſcles. But we muſt note, that the head (according to *Galens* opinion) hath two motions, one directly forwards and backwards, as appears in beckning it forwards, and caſting it backwards; the other circular.

The two motions of the head.

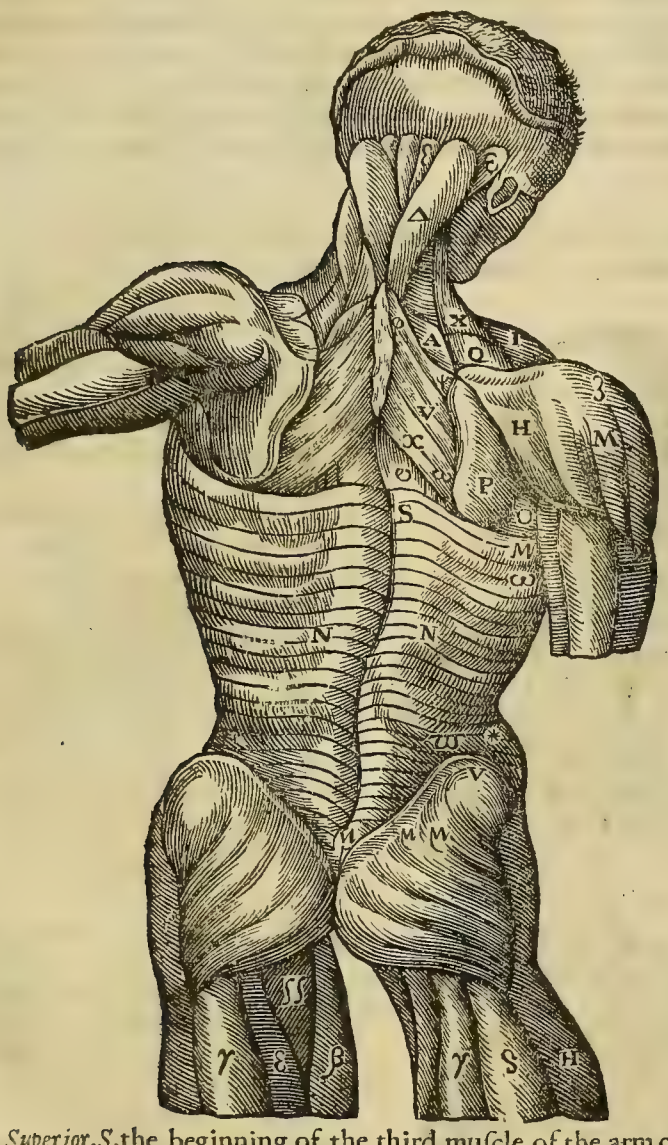
The firſt in *Galens* opinion is performed by the firſt *Vertebra* moved upon the ſecond; the ſecond by the head moved upon the firſt *Vertebra*; for which he is reproved by the latter Anatomiſts, who teach that the head cannot be turned round or circularly upon the firſt *Vertebra* without putting it out of joynt.

The *Maſtoideus.*

For the laſt which bends the head, it aſcends from the upper and ſide part of the *Sternon*, and the next part of the clavicle, obliquely to the *Apophyſis Maſtoides* or mamillary proceſs of the hind part of the head, whence it is called the *Maſtoideus.* You may divide this by reaſon of its manifold originall rather into two, than into three muſcles. But it had been better that the head might have been moved every way, equally back-

backwards and to the right and left ſides; but thus it would often have been ſtrained to our great damage and danger of life; neither could there have been ſuch facility of motion without a looſneſs of the joint. Therefore nature had rather beſtow upon the head an harmleſs faculty of fewer motions, than one furniſhed with more variety, but with a great deal more uncertainty and danger. Wherefore it hath made this juncture not laxe or looſe, but ſtiffe and ſtrong.

*The ſeventh Figure of the muſcles; ſhewing ſome muſcles of the head and Cheſt, the* Trapezius *or Table-muſcle being taken away: as alſo of the blade and arm.*



*A.* The prominent part of the fourth muſcle of the cheſt called *Serratus poſticus ſuperior.*

Δ. the firſt muſcle of the head called *ſplenius.*

*E E.* the inſertion of the ſecond muſcle of the head called *complexus.*

*I.* the coller bone bared.

*M.* the back part of the ſecond muſcle of the arm called *Deltois.*

ζ *H.* his backward originall.

θ. his implantation into the arm.

*N N.* the fourth muſcle of the arm called *Latiſſimus.*

*S μ.* his originall from the ſpines of the rack-bones and from the holy-bone.

ϖ. the connexion of this muſcle with the hanch-bone, which is led in the inſide frm μ to ϖ.

ω. the place where it lyeth upon the lower angle of the Baſis of the ſhoulder-blade.

*O.* the four muſcles of the arm called *Rotundus major.*

*e.* ſome muſcles of the back do here offer themſelves.

*P.* the fift muſcle of the arm called *ſuperſcapularis Inferior.* *Q.* the ſixt muſcle of the arm called *Superſcapularis Superior.* *S.* the beginning of the third muſcle of the arm called *Latiſſimus.* *V.* the third muſcle of the blade called *Rhomboides.* φ *X.* his originall from the ſpines of the rackbones. ϕω. his inſertion into the baſis of the ſhoulder-blade. χ. the fourth muſcle of the blade called *Levator.* * a part of the oblique deſcendent muſcle of the *Abdomen.*

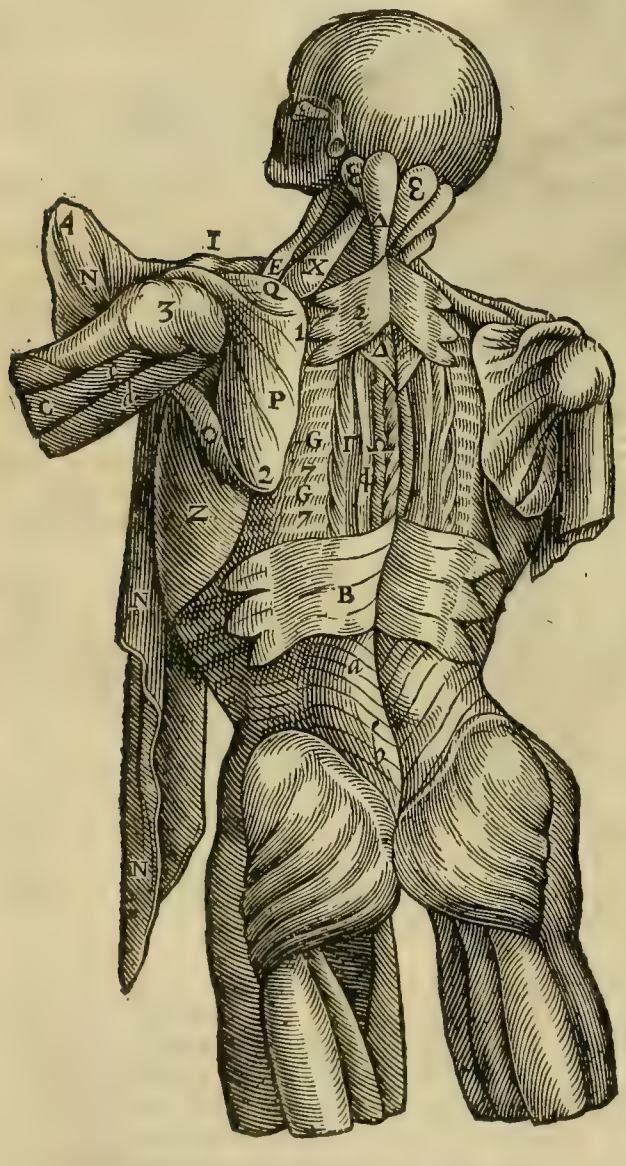
After the ſhewing of theſe muſcles, we muſt come to three or four of the neck, of which number two (which ſome reduce to one) extend, another bends, and the laſt moves ſide wayes, and all of them with a motion ſucceeding each other turn it about as we ſaid of the muſcles of the head. The firſt of theſe which extend, taking its originall from the ſix tranſverſe proceſſes of the ſix upper rack-bones of the back, or rather from the root of the oblique, aſcends directly to the ſpine of the ſecond *vertebra* of the neck, and the oblique proceſs thereof; ſome call it the *Tranſverſarius*; that is, the tranſverſe-muſcle. This, if you deſire to take it away, it is beſt firſt to ſeparate it from the ſpine, then to turn it upwards to the tranſverſe proceſſes; unleſs you had rather draw it a little from its partner and companion in that place where their originals are diſtinct, ſeeing it is the laſt and next to the bones. The *Tranſverſarius.*

Marvell not, if you find not this diſtinction of their originall, ſo plain and manifeſt, for it is commonly obſcure. For the muſcle *ſpinatus*, as it moſt commonly comes to paſs, ariſing from the roots of the ſeven upper ſpines of the back, and the laſt of the neck, is inſerted into other ſpines of the neck, ſo that it might eaſily be confounded with the former The *Spinatus.*

by *Galen.* The third bends the neck, and ariſing within from the body of the five upper *Vertebræ* of the back (though with a very obſcure originall, ſpecially in lean bodies) it aſcends under the gullet alongſt the neck, even to the nowl-bone, into whoſe inner part it is obſcurely inſerted. Wherefore it is likely that it helps not only to bend the neck, but alſo the head. This muſcle is made of oblique fibers proceeding from the body of the *Vertebræ*, all the way it paſſes to the tranſverſe proceſſes of the other *Vertebra.* But it ſeems with its copartner which is oppoſite to it, to make a certain hollow path upon the bodies of the *Vertebræ*, to the gullet, and it is called the long muſcle. The fourth and laſt, which we ſaid moves the neck to one ſide, is called *Scalenus* from the figure thereof; it aſcends from the hinder and upper part of the firſt rib of the Cheſt, inſerting its ſelf into all the tranſverſe proceſſes of the neck by its fibers, which as it were for the ſame purpoſe, it hath ſufficiently long, that it may faſten it ſelf from the furtheſt and loweſt proceſs of the neck into the firſt or higheſt thereof. The paſſage of the nerves through this to the arm makes this muſcle ſeem double or divided into two. For the veins and arteries pertaining to the neck, they have been declared in the proper Chapters of the diſtributions of the veſſels; it remains that you note, all theſe muſcles receive nerves from the *Vertebræ* whence they ariſe.

The *Longus.*
The *Scalenus.*

*The eight Figure of the muſcles, eſpecially thoſe of the Cheſt, Head, and Shoulder blade, the* Trapezius, Latiſſimus, *and* Rhomboides, *being taken away.*



*A.* The fourth muſcle of the cheſt, or the upper and hinder Saw-muſcle.

*B.* the 5 muſcles of the cheſt, or the lower and hinder Saw-muſcle.

*a. b.* a membranous beginning of the muſcle of the *Abdomen*, deſcending obliquely down from the ſpine of the back.

*C.* the firſt muſcle extending the Cubit at *c*, his originall is from the neck of the arm, and from the lower baſis of the blade at *d.*

*E.* the originall of the fourth muſcle of the bone *hyois* from the blade.

*G G.* the outward intercoſtall muſcles.

*I.* the Clavicle or coller-bone bared.

*N.* the upper, the ſecond muſcle of the arm called *Deltois*, char. 4,5. the beginning of this muſcle.

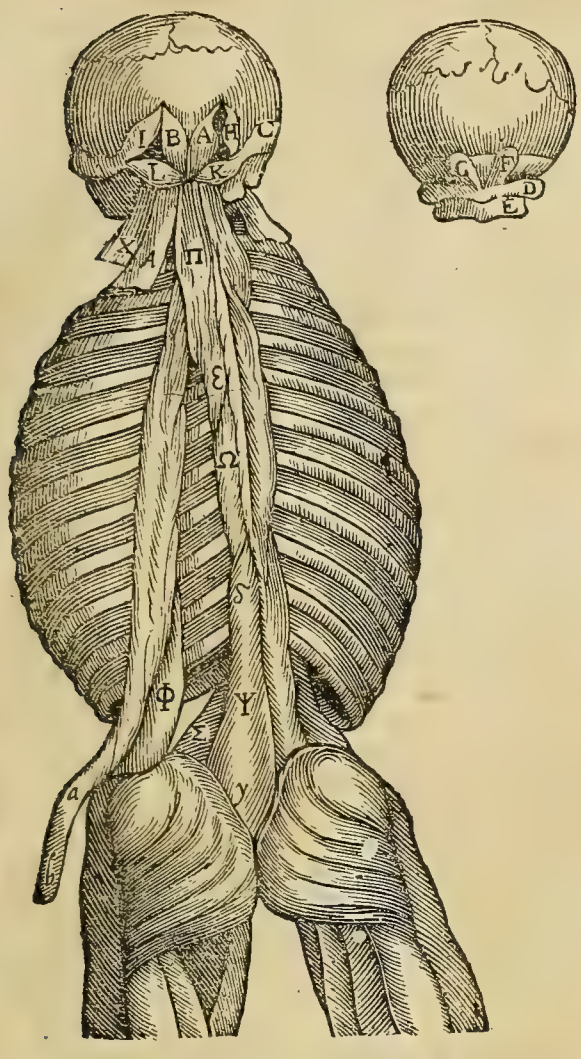
*N.* the third muſcle of the arm or the broad muſcle ſeparated.

*O.* the fourth muſcle of che arm or the lower *Super-Scapularis* or blade-rider.

1, 2, 3. Char. His originall at the baſis of the ſhoulder-blade at 12. and his inſertion into the joynt of the arm at 3. Q. the ſixt muſcle of the arm or the upper *Super-Scapularis.* *X.* the fourth muſcle of the blade called *Levator* or the heaver. *Z.* the ſecond muſcle of the Cheſt or the greater Saw-muſcle. 7.7. Char. the ribs. Γ. the ſixt muſcle of the cheſt, or the muſcle called *Sacrolumbus.* Λ. the firſt muſcle of the head or the ſplinter. E E. the ſecond muſcle of the head or the inſertion of the muſcles called *complexi.* Φ. the ſecond muſcle of the back or the longeſt muſcle. Ω. the fourth muſcle of the back called *Semiſpinatus.*

The

*The ninth Figure of the muſcles, ſhewing the muſcles of the Head and Neck.*




*A B.* the third pair of the Muſcles of the head called *Recti Majores.*
*C.* the Mamillary proceſs.
*D.* the tranſverſe proceſs of the firſt rackbone.
*E*, the proceſs of the ſecond rackbone of the neck.
*F G*, the fourth pair of muſcles of the head called *Recti Minores.*
*H I*, the fift pair of muſcles of the head called *obliqui Supepeirior.*
*K L*, the ſixt pair of muſcles of the head called *obliqui inferiores.*
*X*, the fourth pair of muſcles of the ſhoulder blade.
Λ, the ſecond muſcle of the neck called *Scalenus*, which *Falopius* maketh the eight muſcle of the cheſt.
Π, the fourth muſcle of the neck called *ſpinatus.*
Σ, the firſt muſcle of the back called *Quadratus.*
Φ, the ſecond muſcle of the back called *Longiſſimus.*
*a*, the *ſinus* or boſom of this muſcle, whereby it giveth way unto the third muſcle of the back, called *Sacer.*
*b*, his Originall.
Ψ, the third muſcle of the back called *Sacer.* γ, his Originall. δ, his end.
Ω, the fourth muſcle of the back called *Semiſpinatus.* ε, his upper end under the fourth muſcle of the neck.

## CHAP. XVIII.

### *Of the Muſcles of the Cheſt and Loyns.*

WE muſt now ſpeak of the Muſcles both of the Cheſt which ſerve for reſpiration, as alſo of the Loins. But firſt we muſt know that the hind part of the Cheſt called the *Metaphrenum*, or back, conſiſts of twelve *Vertebræ*, the loins of five, all which differ not from the *Vertebræ* of the neck, but that they are thicker in their bodies than theſe of the neck; neither are they leſſer in holes, neither have they their tranſverſe proceſſes perforated or parted in two as the rackbones of the neck have. Beſides each of theſe rack bones alone by it ſelf, on each ſide in the lower part thereof makes a hole, through which a nerve hath paſſage from the ſpinall marrow to the adjacent parts, when on the contrary in the *Vertebræ* of the neck, ſuch holes or paſſages are not made, but by meeting together of two of them.

In what the *Vertebræ* of the neck and loins agree and diſagree.

Concerning the proceſſes of the Rackbones of the Cheſt, whether tranſverſe, right or oblique, they differ nothing from theſe of the neck (I mean even to the tenth) but that the tranſverſe ſeeing they are not perforated, as we ſaid before, do as it were ſuſtain the ribs, being ſtraitly bound to them with ſtrong ligaments both proper and common; but after the tenth *Vertebra* of the back, the two other of the back, and all thoſe of the loins are different, not only from thoſe of the neck, but alſo from the ten firſt of the back, by reaſon of their oblique proceſſes, becauſe from the eleventh (which is received, as well by that which is above it, as by that under it, for the ſtrength of the whole back, and the eaſier bending thereof without fear of fracture or diſlocation) the above mentioned proceſſes of the lower rack bones which were wont to receive, are received; as on the contrary they receive which were wont to be received. They differ beſides from all the forementioned, by reaſon of their ſpines, becauſe from the eleventh they begin by little and little to look upwards, contrary to the former.

But if any ask, how the tenth *vertebra* of the back may be termed the midſt of the

How the tenth *vertebra* of the back, may be ſaid to be the middle of the ſpine.

ſpine, being the whole ſpine conſiſts of twenty four *vertebræ*? He may know that this may be true, as thus; if the ſix bones of the holy bone, and the fourth of the Rump (being more griſtly than bony) be numbred amongſt the bones of the Spine; for then from the ſetting on of the head to the eleventh rack bone of the back are ſeventeen in number, and ſo many from thence downwards.

The number of the muſcles of the Cheſt.

But let us return to the muſcles of the Cheſt ſerving for reſpiration. Firſt, you muſt know that theſe Muſcles are fourſcore and nine, that is, on each ſide forty four, alike in ſtrength, thickneſs, ſite, and action; and one beſides in the midſt which they call the *Diaphragma* or midriffe. Of theſe forty four, there are twenty two which dilate the cheſt in drawing in the breath; that is, the *Subclavius*, the *Dentatus*, or *Serratus major* in the opinion of ſome, both the *Rhomboides* or *Serrati poſtici*; the oblique aſcendent of the lower belly, the eleven *Intercoſtales*, and the ſixe *Intercartilaginei externi*. On the contrary, as many contract the breaſt in expiration; to wit, the *Sacrolumbus*, the oblique deſcendent, the Right and tranverſe of the lower belly, the inner Trangular, the ſix *Intercartilaginei*, and the eleven inner *Intercoſtales*. Of theſe twenty two dilating the Cheſt, the firſt from the ſite is called the *Subclavius*, for it deſcends obliquely from the inner and forepart of the *Clavicula* or Caller bone, into the griſtle of the firſt rib, even to the *Sternon*, and dilates it. The ſecond is the *Serratus major*, the greater Saw muſcle ariſing according to the opinion of ſome from the whole *baſis* of the ſhoulder blade on the inſide, and it is tranſverſly inſerted into the nine upper ribs, producing certain toothed or ſaw-like proceſſes running further to the bones of the rib, than to the ſpaces between them, or Intercoſtall muſcles, whereupon it hath the name of the Saw muſcle; yet ſome have referred this muſcle to them of the ſhoulder blade. The third deſcends from the three lower ſpines of the neck, and the firſt of the back, by means of a membranous and moſt thin ligament, into the three or four upper ribs, running further into their ſpaces or Intercoſtall muſcles, than into the ribs themſelves, whereupon it is called *Serratus poſterior & ſuperior*, that is, the hinder and upper Saw muſcle. The fourth in like manner aſcends by means of a membranous and thin ligament from the three upper ſpines of the loins, and the two laſt of the cheſt, or back, into three or four of the lower, or laſt of the baſtard ribs, ſent forth further into them or their bones, than into the Intercoſtall muſcles poſſeſſing the ſpaces between them, wherefore it is called *Serratus poſterior & inferior*, the hinder and lower Saw muſcle. Moreover theſe two laſt muſcles have been called by a common name from their figure the *Rhomboides*, that is, the ſquare muſcles. The fift which we ſaid was the aſcendent of the *Epigaſtrium*, hath already been ſufficiently deſcribed in his place. The eleven *Intercoſtales externi*, or externall Intercoſtall muſcles deſcend obliquely from the back part of the lower ſide of the upper rib, into the forepart of the upper ſide of the rib lying next under it, after a quite contrary manner to the ſix *Intercartilaginei*, who having like originall and inſertion amongſt the griſtles, as the Intercoſtall amongſt the ribs, deſcend obliquely from the forepart backwards. And thus much of the muſcles dilating the Cheſt in inſpiration.

The muſcles dilating the Cheſt.

The muſcles contracting the Cheſt.

The *Subclavius* is the firſt of the muſcles dilating the cheſt.

*Serratus major.*

*Serratus poſterior* and *ſuperior.*

The oblique aſcendent of the lower belly.

The eleven *Intercoſtales externi.*

*6. Intercartilaginei.*

But the firſt, of the other muſcles, being as many in number, which contract the Cheſt in expiration, ariſing from the holy-bone, and the oblique proceſſes of the loines, aſcends (firmly and confuſedly adhering with the *Muſculus ſacer*, or holy muſcle, which we ſhall deſcribe hereafter) to the roots of the twelve ribs, imparting in the aſcent a ſmall tendon to each of them, by which it draws theſe ribs towards the tranſverſe proceſſes; and by reaſon of its Originall it is called *Sacrolumbus*, that is, the Holy loin-muſcle.

The *Sacrolumbus*, the firſt of thoſe which contract the cheſt.

The ſecond, third, and fourth, which we ſaid were the oblique deſcendent, right, and tranſverſe of the *Epigaſtrium*, have been formerly deſcribed in their place.

The oblique deſcendent, the right and tranſverſe of the *Epigaſtrium.*

But by the way you muſt note that theſe three muſcles of the *Epigaſtrium* help expiration rather by accident, than of themſelves, to wit, by driving back the midriff towards the lungs by the entrails, which alſo they force upwards, by drawing the parts into which they are inſerted towards their Originall. The fift which we called the *Triangulus*, or Triangular, may be called the *compreſſor* of the griſtles, which proceeding from the inner ſides of the *Sternon*, goes to all the griſtles of the true ribs; this is more apparent under the *Sternon* in beaſts, than in men, though it be not very obſcure in them neither. For the internall Intercoſtall muſcles, in my judgment, they ariſe from the lower ſides of the upper rib, & deſcending obliquely from the forepart backwards, are inſerted into the upper ſide of the rib next under it; ſo that they may follow the production of the fibers of the externall *Intercartilaginei*; as the ſix internall *Intercartilaginei* follow the ſite of the externall Intercoſtall proceeding from behind forwards; wherefore as well the Intercoſtall, as the *Intercartilaginei*, every where interſect each other, after the ſimilitude of the letter X. I know ſome have written that the internall muſcles (whether intercoſtall or *Intercartilaginei*) aſcend from the upper ſide of the lower rib forwards, and backwards.

*Triangulus muſculus.*

*Intercoſtales interni.*

*Intercartaligi-nei interni.*

Muſcles alwayes receive their nerves in their heads.

But if this were true, it would follow that theſe muſcles admitted their nerves in their tail, and not in their head, ſeeing the nerve alwayes goes under the rib, and not above it.

The

The midriffe. The laſt muſcle of the cheſt, that is, the *Diaphragma* or Midriffe, is ſufficiently deſcribed before; wherefore it remains we deſcribe the muſcles of the Loins. The muſcles of the loins. They are three pair. These are ſix in number, on each ſide three, equall in thickneſs, ſtrength and ſituation; one of theſe bends, and the other two extend the Loins; it is called by reaſon of the figure the *Triangulus*, or Triangular which bends the Loins, it aſcends from a great part of the hind ſide of the Hanch-bone into the tranſverſe proceſſes of the Loins, and the laſt of the Cheſt on the inſide, for which cauſe it is made of fibers ſhort, long, and indifferent, anſwering to the nearneſs or diſtance of the ſaid proceſſes. *Triangulus.* The firſt of the extenders is called the *Semiſpinatus*, becauſe even to the middle of its body it takes the originall from the ſpines of the Holy bones and Loins; this with its oblique fibers aſcends from all the ſaid ſpines to the tranſverſe proceſſes, as well of the Loins as Cheſt. *Semiſpinatus.* The other is called *Sacer*, the Holy-muſcle, becauſe it takes its originall from the Holy-bone, or the ſides thereof; it aſcends with its oblique fibers to the ſpines of the Loins, and of the eleaven lower Rack-bones of the Cheſt. *Sacer.*

## CHAP. XIX.

### *Of the Muſcles of the Shoulder-blade.*

NOw we muſt deſcribe the muſcles of the extreme parts, and firſt of the Arm, taking our beginning from theſe of the ſhoulder-blade. But firſt, that we may the better underſtand their deſcription, we muſt obſerve the nature and condition of the ſhoulder-blade. Therefore the blade-bone on that part, which lies next unto the ribs, is ſomewhat hollowed; wherefore on the other ſide it ſomewhat buncles out. It hath two ribs, one above, another below: by the upper is meant nothing elſe than a border or right line, which looking towards the temples is extended from the exterior angle thereof under the collar-bone, even to the Proceſſe *Coracoides* which this rib produces in the end thereof: By the lower, the underſide which lies towards the lower belly and the ſhort ribs. The deſcription of the blade-bone, or ſhoulder-blade.

Beſides, in this ſhoulder-blade we obſerve the *baſis*, head and ſpine. By the *baſis* we underſtand the broader part of the ſhoulder-blade, which looks towards the back-bone. By the head we underſtand the narrower part thereof, in which it receives the head of the Arm in a cavity, indifferently hollow, which it produces both by it ſelf, as alſo by certain griſtles, which there faſtned encompaſſe that cavity. This kind of cavity is called Glene. The baſis of the blades. The head of the ſhoulders blade.

This receives and contains the bone of the arm, by a certain ſtrong ligament encompaſſing aud ſtrengthning the joint, which kind of ligament is common to all other joints; this ligament ariſes from the bottom of the cavity of the ſhoulder-blade, and circularly encompaſſes the whole joint, faſtning it ſelf to the head of the arm; there are alſo other ligaments beſides this, which incompaſſe and ſtrengthen this articulation. By the ſpine is meant a proceſſe, which riſing by little and little upon the gibbous part of the blade, from the *baſis* thereof where it was low and depreſt, becomes higher untill it ends in the *Acromion*, or upper part thereof. Nature hath made two productions in this bone (that is to ſay, the *Acromion* from the ſpine, and the *Coracoides* from the upper ſide) for the ſtrengthning of the articulation of the arm and ſhoulder-blade, that is, leſt the arme ſhould be eaſily ſtrained upward or forwards; beſides, it is faſtned to the clavicle, by the proceſſe *Acromion*. The ſpine of the blade. The proceſſes *Acromion* and *Coracoides*. The muſcles of the ſhoulder-blade.

The muſcles which move the ſhoulder-blade are ſix in number, of which four are proper, and two common. The firſt of the four proper ſeated in the forepart, aſcends from the bones of five or ſix of the upper ribs, to the *Coracoides*, which it drawes forwards, and is called *Serratus minor*, that is, the leſſer ſaw-muſcle; which that you may plainly ſhew, it is fit you pull the pectorall muſcle from the collar-bone, almoſt to the middle of the *Sternon*. The other firſt oppoſite againſt it, is placed on the fore ſide, and draws its originall from the three lower ſpines of the neck, and the three upper of the Cheſt, from whence it extends it ſelf, and ends into all the griſtly baſis of the ſhoulder-blade, drawing it backwards; it is called the *Rhomboides*. The third from its action, is called the *Levator*, or the heaver, or lifter up, ſeated in the upper part, it deſcends from the tranſverſe proceſſes of the four firſt *Vertebræ* of the neck into the upper angle and ſpine of the blade. The fourth called *Trapezius*, or the Table-muſcle, is ſeated in the back-part and is membranous at the originall, but preſently becomes fleſhy: it ariſes from almoſt all the back-part of the head, from all the ſpines of the neck, and the eight upper *Vertebræ* of the cheſt, and then is inſerted by his nervous part, almoſt into the whole baſis of the blade, extending it ſelf above the muſcles thereof, even to the midſt of its ſpine, where being fleſhy it is inſerted even to the *Acromion*, the upper part of the clavicle, and in ſome ſort to the upper rib. This muſcle hath a threefold action, by reaſon of its triple originall. The firſt is to draw the ſhoulder-blade towards its originall, that is, to the nowle, and ſpine of the neck; the other is to draw it towards the back, becauſe of the contraction of the middle or *Serratus minor.* *Rhomboides.* *Levator.* *Trapezius.*

tranſ-

tranſverſe fibers which lead it directly thither; and the other is to draw it downwards by reaſon of the originall it hath from the fifth, ſixth, ſeventh and eight ſpine of the *Vertebræ* of the Cheſt.

But we muſt note, that theſe divers actions are not performed by this muſcle, by the aſſiſtance of one only nerve, but by more, which come into it by the ſpinall marrow, by the holes of the *Vertebræ*, as well of the neck as the cheſt, from whence it takes the original. For the two other which are the common muſcles of the blade, and arm, or ſhoulder, we will deſcribe them with the muſcles of the ſhoulder or arm: for one of theſe which is called *Latiſſimus.* the *Latiſſimus*, that is, the broadeſt, aſcends from the holy-bone to the ſhoulder-blade and arm.

*Pectoralis.* The other the named *Pectoralis* comes from the *Sternon* and collar-bone to the ſhoulder-blade and arm.

## CHAP. XX.

*The deſcription of the Hand taken in generall.*

NOw it befits us to deſcribe in order the muſcles of the arm; but firſt we muſt know, what it is that we call the arm. But ſeeing that cannot fitly be underſtood, unleſſe we know what the hand is, ſeeing that the arm is a part of the hand; therefore firſt we muſt define what a hand is, and then divide it into its parts. Therefore the hand is taken two manner of waies, that is, generally and ſpecially.

What is meant by the hand in generall. The hand generally taken, ſignifies all that which is contained from the joyning of the arm to the ſhoulder-blade, even to the ends of the fingers. But in particular it ſignifies only that which is comprehended from the furtheſt bones of the cubit, or the beginning of the wriſt, to the very fingers ends.

Therefore the hand in generall is an inſtrument of inſtruments, made for to take up and hold any thing. It is compoſed of three great parts, that is, of the Arm, Cubit, and Hand, vulgarly, and properly ſo called; but the hand taken thus in particular is again divided in three other parts, the *Carpus* or *Brachiale*, the wriſt, the *Metacarpium* or *Poſtbrachiale*, the after-wriſt, and the fingers; all theſe parts (ſeeing each of them are not only organicall parts, but alſo parts of organicall parts) are compoſed of all, or certainly of the moſt of the ſimilar parts; that is, of both the skins, the fleſhy pannicle, the fat veins, arteries, nerves, muſcles or fleſh, coats both common and proper, bones, griſtles, and ligaments, all which we will deſcribe in their order.

The differences of the hand from the ſite thereof. But firſt I think good to admoniſh you of the differences of the hand taken from the ſite thereof, and theſe differences are ſix in number, the fore, the hind, the internal, the external, the upper and lower ſide or part thereof.

By the fore we mean that part which looks directly from the thumb to the ſhoulder: by the hind, we underſtand the part oppoſite to it, which from the little finger looks towards the baſis of the ſhoulder-blade. By the inſide we ſignifie that part which lies next to the ſides of the body, when the hand retains its naturall ſite; by the outſide, the part oppoſite to it. The upper and lower ſide you may know by the very naming thereof.

Why the hand is divided into ſo many fingers The hand properly ſo called is divided into five fingers, that ſo it may hold and take up bodies of all figures, as round, triangular, ſquare and the like, and gather up the leaſt bodies with the fingers ends, as needles, pins, and ſuch like.

Why the nails are added to the ſoft fleſh of the fingers. Nature hath beſtowed two hands upon us, that ſo they may help each other, each moving to each ſide. But for the taking up and holding of ſmall bodies it was fit, that the fingers of their own nature ſoft, ſhould be armed with nails, that conſiſting of ſoft fleſh and an hard nail, they might ſerve for all actions; for the nail is a ſtay to the ſoft fleſh, which otherwiſe would turn away in meeting with an hard body; the uſe of the nails is to ſcratch, ſhave, and pull off the skin, to rend, pinch, and pluck aſunder ſmall bodies. They have not bony hardneſſe, that ſo they might not break but bend.

Why the nails grow continually. Yet other creatures have hard nails to ſerve them in ſtead of weapons. Their figure is round, becauſe ſuch a figure is leſſe obnoxious to externall injuries; and by reaſon they are ſubject to wearing, they grow continually.

Nature hath placed fleſh on the inner and ſide part of the fingers, ſo to preſſe more ſtraitly, the things they once take hold of, ſo that by holding them cloſe together we can hold water that it may not run out. The length of the fingers is unequall, that when they are opened and ſtretched forth, they make as it were a circular figure; for ſo it comes to paſſe, that the hand can hold all bodies, but eſpecially round.

It remains that we proſecute the diſtribution of the veins, arteries, and ſinews, which run over al the parts of the hand taken in generall and particular, whereby we may more commodiouſly hereafter handle all the proper parts thereof.

CHAP.

## CHAP. XXI.

*The distribution of the Subclavian vein, and first of the* Cephalica, *or* Humeraria.

TWo large veins descend from the Subclavian, the one from the lower side, the other from the higher. Yet sometimes, and most usually, both these proceed from the same common orifice, as in men of a low stature in the arm. The one of these is called the *Axillaris*, the other the *Humeraria*, or *Cephalik*; therefore this Cephalick passing forth of the Subclavian runs superficially along the foreside, between the muscle *Deltoides*, and the Tendon of the pectorall muscle, and descends in the midst between the common coat of the muscles, and the fleshy pannicle, even to the bending of the cubit, where in lean bodies it is plainly to be seen, whereas in fat bodies it is hardly to be perceived, being as it were buried in abundance of fat. This vein having in its descent, sent forth some small branches, both to the skin, as also to certain muscles over which it runs, is divided into two, a little above the outward protuberation of the arm. One of the branches into which it is divided descending obliquely to the fore part of the cubit, a little below the bending of the cubit, it meets, and is united with the like branch in the same place, as shall be shown hereafter.

The Cephalick vein.

That which arises from this concourse, is called the median vein, because it arises from two branches, and is seated between them. They usually open this median vein in the diseases of the head and liver, which require Phlebotomy; but if it shall not be sufficiently manifest, when you judg it must be opened, for a generall evacuation of the whole body; you may cut one of these branches, by whose concourse it is made, which you shall think the fitter; and because each branch draws from the next parts, according to the straightnesse of the fibers, rather then from the opposite side; if you would evacuate the head, and liver equally, by opening either of these branches, it is convenient that opening that branch (for example) which comes from the Cephalick, you presently lay your thumb upon it, untill you suppose you have drawn a just quantity of blood from the liver, by the *Basilica*, or liver-vein; which done, you may take off your thumb, and suffer the blood to follow freely, by the open branch of the Cephalick, untill you have drawn as much blood as you shall judge requisite; otherwise you will draw it but from one part, to wit, the head. So you shall evacuate it only from the liver, if you open the branch which comes from the *Basilica*, and concurs to the generation of the median.

The median vein. How by opening the median vein, you may draw more or lesse blood from the head or liver.

Moreover, when there is need to open the *Basilica*, and it shall be no where conspicuous, the Cephalick or median being easie to be discerned at the same time, you may in stead thereof open the median, or if it be not to be found, the Cephalick, pressing but the trunk thereof with your thumb, as we said before, lest the head should be evacuated in stead of the liver. You may doe the same in the *Basilica*, if when there shall be necessity to open the Cephalick, it shall not appear. Most of those which at this day open a vein, in stead of the median, open that branch of the *Basilica* which ascends together with the Cephalick to make the median. But you must understand that the median descends between the two bones of the cubit, even to the end thereof, and then divided into many branches, it is at length spent on the back of the hand behind the thumb, the fore and middle fingers, or the afterwrist. Sometimes it runs back into the following branch, and then at the wrist it departs from it, to be bestowed upon the forementioned parts. The other branch of the Cephalick, which we may call the fore and outward Cephalick, descending directly down to the midst of the wand, thence wanders overthwart into the hind part of the arm, where encreased with a branch from the *Basilica*, it is distributed over all the back of the hand, which with the median it nourisheth. But the branches of these veins do so run through the forenamed parts, that by the way they yeeld them necessary provision.

## CHAP. XXII.

*The Description of the Axillary vein.*

THe Axillary arising at the insertion of the pectorall muscle, or a little higher, after it hath produced the two *Thoracicæ* it is divided under the tendon of that muscle into two fair branches, that is to say, into the inner deep Axillary, and the skin or outward Axillary. The deep or inner having still for his companion in his descent, the axillary artery, and the nerves of the third conjugation, after it hath produced the small externall musculous of the arm, it goes into the bending of the elbow, where running somewhat deep with the artery and nerve into the muscles of the cubit, it is divided into three other branches, of which one descending with the wand, slides under the ring, into the inner side of the hand, and hath bestowed two small branches on the thumb, two others on the fore, and one upon the middle-finger, so that all of them ascend by the sides of these fingers, the other descending with the artery,

The axillary is divided into the deep axillary, and outward axillary.

as the former alongſt the cubit, ſends branches to the reſt of the fingers, like as the former. The third goes on the foreſide between the two bones even to the wriſt, and the ſquare muſcle.

But you muſt note that the veins of which we now treat, do not only make theſe diviſions mentioned by us, but infinite others beſides, as well in the parts which they goe to, as alſo in the inner muſcles of the hand which they nouriſh.

And thus much of the internall and deep axillary vein. For the externall or skin Axillary (which firſt appears under the skin, eſpecially in lean bodies, a little above the inward production of the arm) it is divided in that place into two branches, the one whereof deſcending to the bending of the arm meets, and is united with the Cephalick branch, ſooner or later, that ſo it may produce the median, as we formerly mentioned.

The other branch having ſent forth many ſhoots of a different length and thickneſſe, as well into the skin, as into the other neighbouring parts, deſcending alongſt the lower ſide of the bone of the cubit, properly ſo called, is at length ſpent upon the fore and outward Cephalick branch, which we ſaid deſcendended alongſt the wand; and thus united, they run over all the hand, where in the right hand, between the middle and fore finger, they make the *Salvatella*; but in the left, in the ſame place, they produce the *Splenitica*.

The *Salvatella* and *Splenitica*.

But alwaies remember, (if in diſſection you find any thing otherwiſe than we have delivered it) that the diſtribution of the veſſels is ſo various, eſpecially in the hands) that there can no certain rule be delivered thereof.

## CHAP. XXIII.

### *The Diſtribution of the Axillary Artery.*

THe Axillary artery from the firſt originall, which is preſently after the two *Thoracicæ*, deſcending between the muſcle called *Biceps*, or the two headed muſcle, and the *Brachiæus*, with the deep Axillary vein, diſtributes a large branch amongſt the outward muſcles of the arm, which extend the cubit, and is ſpent in the externall muſcles of the ſame, which ariſe without, from the productions of the arm.

And this is called the *Ramus Muſculus*, or Muſculous branch, as alſo the vein that accompanies this arterie. Then this artery when it comes to the bending of the cubit, thruſting it ſelf into the muſcles bending the fingers, communicates certain branches to the parts pertaining to the dearticulation of the cubit with the ſhoulder, and other parts there ſituate, as it did in the upper parts, by which it deſcended hither. Verily it may be a generall rule; that every veſſell ſends or beſtows certain portions thereof by the way to all the parts by which it paſſes. But if you ſhould ask, why I have not proſecuted theſe productions; I would anſwer; I never intended to handle other than large and fair branches of veſſels, by raſh inciſion of which, there may happen danger of death or a diſeaſe. For it would be both an infinit and needleſs buſines to handle all the ſmall devarications of the veins, arteries, and nerves. Therefore this artery ſunk into theſe muſcles, when it comes almoſt to the midſt of the cubit, preſently or a little after it is divided into two large branthe, the one of which alongſt the wand, and the other alongſt the cubit is carryed into the hand on the inſide under the Ring. For both theſe branches are diſtributed and ſpent upon the hand after the ſame manner as the branches of the interall Axillary vein, that is, having ſent by the way ſome little ſhoots into the parts by which they paſſe, at the length the branch which deſcends by the Wand of the remainder thereof, beſtows two ſprigs upon the thumb, on each ſide one, and two in like manner on the fore finger, and one on the middle; the other which runs alongſt the Ell, performs the like office to the little and the middle or ring finger, as you may ſee by diſſection.

An Anatomicall Axiome.

## CHAP. XXIV.

### *Of the Nerves of the Neck, Back, and Arm.*

NOw we ſhould handle the ſinewes of the Arm, but becauſe theſe proceed from the nerves of the neck and back; I think it fit therefore to ſpeak ſomething of them in the firſt place.

The 7 pair of nerves of the neck.

The firſt pair.

Therefore from the neck there proceeds ſeven pair of nerves, the firſt of which proceeds from the nowl bone, and the firſt *Vertebra* of the neck; as alſo the firſt pair of the Back from the laſt *Vertebra* of the neck, and the firſt of the Cheſt. But all theſe nerves are divided into two or more branches of the firſt pair (that is to ſay, on each ſide) go, the one to the ſmall right muſcle, aſcending from the firſt rack-bone of the neck to the nowl bone, the other to the long muſcle on the foreſide of the neck.

The ſecond pair.

The branches of the ſecond pair are diſtributed, ſome with a portion which they receive from

from the third pair over all the skin of the head; the two others go as wel to the muſcles, which are from the ſecond *Vertebra* to the backpart of the head, and from the ſame to the firſt *Vertebrá*, as alſo to the long muſcle before mentioned.

The third pair.

One of the third pair of ſinewes is communicated to the head, as we ſaid before, but others to the Muſcles which extend, or erect the head and the neck; there is alſo one of theſe diſtributed into the neighbouring ſide muſcle and part of the long.

The fourth pair.

The nerves of the fourth pair go, one to the muſcles as well of the neck as the head, and to the broad muſcle; the other after it hath ſent ſome portion thereof into the long muſcle and the ſide muſcles of the neck, it deſcends with a portion of the fift and ſixt pair to the Midriffe. One of the branches of the fift pair is beſtowed on the hind muſcles of the neck and head, the other upon the long muſcle and midriffe; the third is communicated to the *Levatores*, or Heaving muſcles of the arm and ſhoulder.

The fift pair.

The ſixt pair.

One of the nerves of the ſixt pair goes to the hind muſcles of the neck and head, another to the Midriffe, the third with a portion of the ſeventh pair of the neck, and of the firſt and ſecond of the cheſt go to the arms and heaving muſcles of the ſhoulder-blade.

The ſeventh pair.

One of the branches of the ſeventh pair runs to the broad muſcle and to the neighbouring muſcles both of the neck and head; another encreaſed with a portion of the fift and ſixt pair of the neck, and a third joyned to the ſecond and third pair of the cheſt deſcending into the arm go to the hand.

But you muſt note that the muſcles which take their original from many *Vertebræ*, whether from above downwards, or from below upwards, admit nerves not only from the *Vertebræ* from whence they take their originall, but alſo from them which they come neer in their deſcent, or aſcent.

The 12. pair of nerves of the cheſt.

There paſſe twelve conjugations of nerves from the rack-bones of the cheſt.

The firſt pair.

The firſt entring forth from between the laſt rack-bone of the neck and the firſt of the cheſt, is divided (that is, on each ſide, each nerve from his ſide) into two or more portions, as alſo all the reſt. Therefore the branches of this firſt conjugation go ſome of them to the arms, as we ſaid before, others to the muſcles, as well theſe of the cheſt, as others ariſing there, or running that way.

The ſecond pair.

The branches of the ſecond conjugation are diſtributed to the ſame parts, that theſe of the firſt were.

The other pairs.

But the branches of all the other conjugations even to the twelfth, are communicated, ſome to the intercoſtall muſcles running within under the true ribs even to the *Sternon*, and under the baſtard ribs even to the right and long muſcles; and the coſtall nerves of the ſixt conjugation are augmented by meeting theſe intercoſtall branches by the way as they deſcend by the roots of the ribs. Other particles of the ſaid nerves are communicated to the muſcles as well of the cheſt, as ſpine, as the ſame muſcles paſſe forth, or run alongſt by the *Vertebræ*, from whence theſe nerves have either their originall, or paſſage forth.

The nerves which are carried to the arms.

Having thus therefore ſhewed the originall of the ſinews of the arm, it remains that we ſhew their number and diſtribution.

Their number is five or ſix; proceeding from the fifth, ſixth, and ſeventh *Vertebra* of the neck, and the firſt and ſecond of the cheſt. The firſt of which not mixed with any other from the fifth *Vertebra* of the neck, goes to the muſcle *Deltoides* and the skin which covers it.

The other 4 or 5 when they have mutually embraced each other, not only from their firſt originall but even to the ſhoulder, where they free themſelves from this convolution, are diſtributed after the following manner.

The firſt and ſecond deſcending to the muſcle mentioned a little before, and thence ſometimes even to the hand, is by the way communicated to the muſcle *Biceps*, and then under the ſaid muſcle it meets and is joined with the third nerve. Thirdly, it is communicated with the longeſt muſcle of the cubit, in the bending whereof it is divided into two branches deſcending alongſt the two bones of the cubit, untill at laſt born up by the fleſhy pannicle it is ſpent upon the skin and inner ſide of the hand.

The third lower than this, is firſt united with the ſecond, under the muſcle *Biceps* then ſtraightway ſeparated from it, it ſends a portion thereof to the arm which lies under it, and to the skin thereof; laſtly, at the bending of the cubit on the foreſide, it is mingled with the fift pair.

The fourth the largeſt of all the reſt, comming down below the third branch under the *Biceps*, with the internall axillary vein and artery, is turned towards the outwatd and backpart of the arm, there to communicate it ſelf to the muſcles extending the cubit, and alſo to the inner skin of the arm, and the exterior of the cubit; the remainder of this branch when in its deſcent it hath arrived at the joint of the cubit, below the bending thereof it is divided into two branches, the one whereof deſcending alongſt the cubit is ſpent on the outſide of the wriſt; the other aſſociating the wand is on the outſide in like manner in two branches beſtowed upon the thumb, and in as many upon the fore finger, and by a fift upon the middle finger though more obſcurely.

The fift branch being alſo lower than the reſt, ſliding between the muſcles bending and exten-

extending the cubit,when it comes behind the inner protuberation of the cubit(in which place we ſaid before the third Branch meets with this ) it is communicated to the internall muſcles of the ſame,and then divided into three portions,one of which on the outſide alongſt the middle of the cubit goes in two ſprigs to the little finger , and ſo many to the middle finger,and one to the ring finger; the other two,the one without & the other within the ring, goe to the hand,where after each of them hath beſtowed what was requiſite on the muſcles of the hand,they are waſted into other five ſmal portions,of which theſe which are from that portion which deſcends without the ring, ſend two ſprigs to the little, two to the fore,& one to the middle finger;but theſe which come from that which paſſes under the ring, by ſuch a diſtribution communicates it ſelf to other fingers,as two ſprigs to the thumb, two to the fore and one to the middle finger. The ſixth the loweſt and laſt runs between the skin and fleſhy pannicle,by the inner protuberation of the arm,and then is ſpent upon the skin of the Cubit.

## CHAP. XXV.

### *The deſcription of the bone of the Arm, and the Muſcles which move it.*

The greatneſſe and figure. The Appendix of the Arm. The proceſſes of the arm.

BEcauſe we cannot perfectly demonſtrate the originall of the muſcles of the arm, ( eſpecially of the two arm muſcles) not knowing the deſcription of this bone; firſt therefore we will deſcribe it, then return to the originall of the muſcles ariſing from thence. The bone of the arm is the greateſt of all the bones in the body, except the Thigh-bone; it is round, hollow and filled with marrow, with a great Appendix or head on the top thereof,having an indifferent neck, to which it is knit by *Symphyſis*, for appendices are no otherwiſe united to their bones.In the lower part thereof it hath two proceſſes, or protuberations,one on the fore ſide, another on the hind,between which ſwellings there is a cavity like to half the compaſſe of a wheel, about which the cubit is moved. The extremities of this cavity ends in two holes,of which one is the more externall, the other more internall : theſe cavities receive the heads of the cubit, that is, the fore, or internall receives the fore proceſſe when the arm is bended inwards,but the externall or hinder the exterior as it is extended.

For the head of the arm it hath a double connexion,the one with its own neck by *Symphyſis*; that is, a naturall union of the bones without any motion ; the other with the lightly ingraven cavity of the ſhoulder-blade,which we call *Glene*, by that kind of [dearticulation which is called *Arthrodia*; this connexion is made firm and ſtable by the muſcles deſcending into the arm from the ſhoulder-blade, as alſo by the proper ligaments deſcending from the circle and brow of the cavity of the *Acromion* and *Coracoides* to this head of the arm;this ſame head of the arm is, as it were,more cleft and open on the inner ſide,than on the fore ſide, that ſo it may give way to one of the ligaments coming from the ſhoulder-blade to the muſcle *Biceps*. Foraſmuch as belongs to the lower end of the bone of the arm ( which we ſaid hath two proceſſes ) we may ſay that it is faſtned to the bones of the cubit by two ſorts of articulation; that is, by *Ginglymos* with the Ell or proper bone of the cubit, and by *Arthrodia* with the *Radius* or wand, which in a lightly engraven cavity receives the fore proceſſe of the arm, and is turned about it for the motion of the hand. The hinder proceſſe is chiefly added for the ſafety and preſervation of the veins , arteries and nerves.

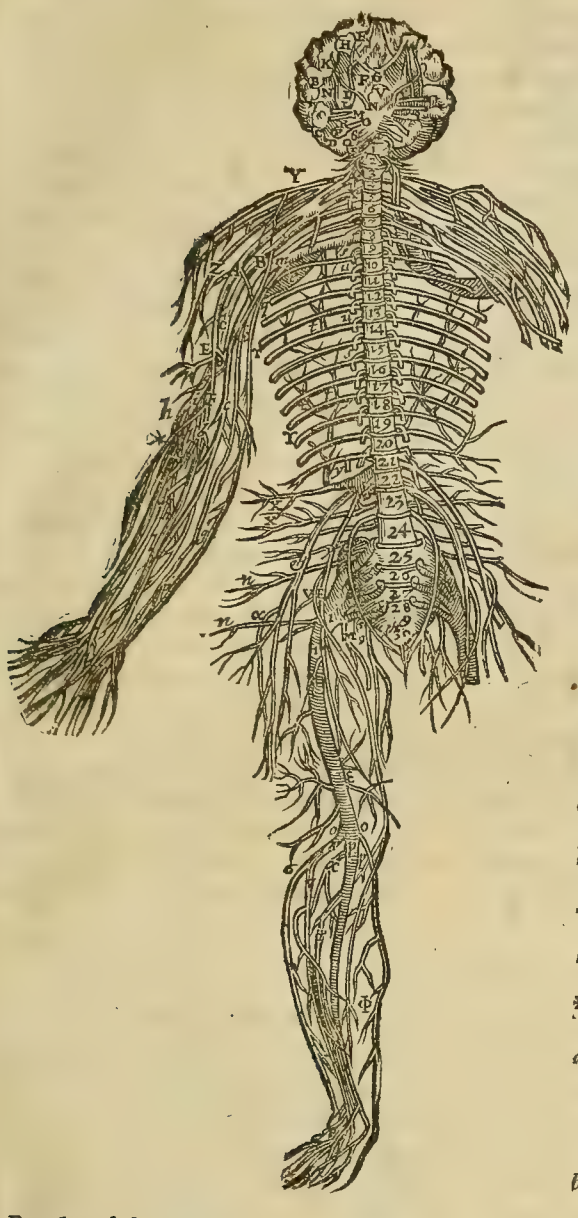
The figure of the arm.

Theſe things thus ſhown,it is worth our labour to know the figure of the arm it ſelf, as it lies between the forementioned appendices and proceſſes;that in the caſe of a fracture, we may know how conveniently to reſtore it; therefore firſt we muſt underſtand, that this bone is ſomewhat bended and hollowed on the inſide under the cleft of the head thereof, but bunching out on the out and fore ſide.

The 8 muſcles thereof.

Wherefore ſeeing it muſt be moveable forwards and backwards , upwards and downwards , nature for the performance of ſo many motions hath furniſhed it with eight muſcles, which are fix proper and two common with the ſhoulder-blade. Of which number two move it forwards, two backwards, two upwards and downwards. Which muſt not be underſtood ſo, as that theſe two muſcles ſhould move it directly forwards iuclining neither upwards, nor downwards;and the other two ſhould move it ſo upwards, as it ſhould incline neither forward nor backwards;but thus, that it cannnot be moved neither to this nor that part unleſſe by the help and proper action of this, or that muſcle. Thus therefore if the pectorall with his aſſociate perform their duty or action,the arm is alwaies moved forwards,as it is lifted up by the action of the *Deltoides* and his companion , and ſo of the reſt.

*Table 24. ſheweth the brain together with the After-brain, the ſpinall marrow and the nerves of the whole body.*



*A*, That part of the brain that is next the noſtrils.
*B*, That part which is at the ſide of the ventricles.
*C*, The back part of the brain.
*D*, The *Cerebellum* or After-brain.
*E*, The mamillary proceſſe in the right ſide.
*F*, The originall of the optick nerve.
*G*, Their conjunctions.
*H*, The coat into which the optick nerve is extended.
*I*, The ſecond pair of the ſinews of the brain.
*K*, The leſſer root of the third conjugation.
*L*, The thick root of the ſame conjugation according to the common opinion.
*M*, The fourth conjugation of the ſinews.
*N*, The leſſer root of the fift pair.
*O*, The bigger root of the ſame pair.
*P*, The ſmall membrane of the ear which they call the *Tympany*.
*Q*, The lower branch of the bigger root of the fift conjugation.
*S*, The ſixt pair of ſinews.
*T*, The ſeventh pair.
*V*, The beginning of the ſpinall marrow out of the middle of the baſis of the brain.
*X*, The right ſinew of the midriffe cut off.
*Y*, A branch from the fift pair creeping to the top of the ſhoulder.
*Z*, The firſt nerve of the arm; from whence there goeth a branch to the skin.
*A*, The ſecond nerve of the arm, and a branch therefrom into the firſt muſcle of the cubit.
*B*, The third nerve of the arm and a branch going to the skin on the outſide.
*C*, A branch from the third nerve to the ſecond muſcle of the Cubit.
*D*, The congreſſe or meeting of the ſecond nerve with the third.
*E*, A ſmall branch from the third nerve to the ſecond muſcle of the *Radius*.
*F*, The diſtribution of the ſecond nerve into two branches.
* The leſſer branch of this diviſion lengthned out to the skin as far as the thumb.
*a*, The place of the ſpinall marrow where it iſſueth out of the brain 1, 2, 3. &c. Thirty pair of nerves ariſing from the ſpinall marrow are here noted by their Char. that is to ſay, 7. of the neck, 12. of the Cheſt, 5. of the loins, and 6. of the holy-bone.
*b*, The thicker branch of the 2 nerve divided into 2 parts.
*c*, Branches of the 3 nerve ſprinkled here and there.
*d*, Nerves from the third pair to the thumb, the fore finger and the middle finger.
*ee*, The 4 nerve of the arm. *f*, The paſſage hereof through the inſide of the ſhoulder.
*g*, A tripartition of this branch where it toucheth the cubit. *hh*, A branch diſtributed from the 4 nerve to the outward skin of the cubit. *i*, the upper branch of the diviſion of the 4 nerve. *kk*, A branch of *i*, reaching to the outſide of the hand. *ll*, the lower branch of the diviſion of the 4 nerve paſſing through the backſide of the cubit. *m*, the fifth nerve of the arm. *n*, branches of this nerve diſperſed here and there. *oo*, A branch of the 5 nerve reaching to the inſide of the hand and the fingers. *p*. A ſurcle of the branch *o*, derived to the outſide of the hand and the fingers. *qq*, the 6 nerve of the arm and the courſe thereof under the skin. *rr*, the intercoſtall nerves there cut off where they are together with the ribs reflected forward. *ſſ*. branches on each ſide running backward. *tt*, nerves attaining unto the cheſt. *uu*, the commixtion of the nerves. *rr*, with the deſcending branch of the 6. conjugation of the brain. *xx*, nerves from the loins led unto this place. *y*, A branch going to the teſticle here cut off. *ζ*, A nerve reaching to the 1 muſcle of the thigh. *c*, the 1 nerves of the leg. *αβ*, A ſurcle of the former nerve derived to the skin at *α*, and inſerted into the muſcles at *β γ*, the 2 nerve of the leg. *ϑϑϑ*, A nerve from the former, allowed unto the skin as low as to the foot, and paſſing along the inſide of the leg. *ε*, a branch of the 2 nerve running unto the muſcles. *ζ*, the 3. nerve of the leg. *η*, a ſurcle thereof unto the skin. *θ*, another ſurcle unto the muſcles. *ιι*, the 4 nerve of the leg. *κκ*, the *anterior* propagations of the nerves proceeding from the holy-bone. *λ*, the end of the ſpinall marrow. *μ*, a branch from the 4 nerve inſerted into the muſcles ariſing from the *Coxendix* or hip bone. *ν*, another branch going to the skin of the thigh on the backſide. *ξ*, a propagation derived to the 4. muſcle of the leg and to the skin of the knee. *οο*, nerves attaining to the heads of the muſcles of the foot. *ϖρ*, the diviſion of the 4 crurall nerve into two trunks *σ*, a branch from the trunk *π*, diſperſed into the outward skin of the leg. *τ*, a ſurcle of the trunk *π*, derived to the muſcles. *υ*, another ſurcle to the skin of the leg on the foreſide. *φ*, a branch of the trunk *ρ*, to the skin of the inſide of the leg and of the foot. *χ*, a ſurcle of the trunk *ρ*, to the hindmoſt skin of the leg. *ψ*, a branch of the whole trunk *ϱ*, led along to the forward part of the leg and the foot. *ω*, the deſcent of the trunk *ϱ*, into the foot.

But to come to the originall and inſertion of theſe muſcles; the one of theſe two which move the arm forwards called by reaſon of his originall, the Pectorall, ariſing from more than

The originall and inſertion of the pectorall muſcle.

than half of the Collar bone, and almoſt al the *Sternon*, and the 6, 7, and 8. rib, goes up and faſtens it ſelfe to the *Coracoides*, by a membrane or a membranous tendon ſufficiently ſtrong (for which cauſe it is ſaid to be common to the ſhoulder and arm) and it goes into the arm between the muſcles *Deltoides* and *Biceps* with a ſtrong tendon compoſed of fibers croſſing each other, of which ſome deſcend from the Collar-bone and the upper part of the *Sternon*, others aſcend from the lower originall hereof; that is, from the 6, 7, and 8 ribs: and although the action of this muſcle be diverſe, by reaſon of the diverſity of its fibers ariſing from divers places, yet alwaies it drawes the arm forwards, whether it be moved upwards, downwards, or to the Breſt; the other which is his companion deſcends from the whole lip or brow of the ſinous or hollow part of the blade, which it fills in the forepart of the arm neer the head thereof. For the two *Levatores*, or the lifters up of the arm, the firſt named *Deltoides* deſcends from almoſt halfe the clavicle, the proceſs *Acromion* and all the ſpine of the ſhoulder-blade into the foreſide of the arm the bredth of four fingers below the joint. It hath divers actions according to the diverſity of the fibers, as alſo every muſcle hath; yet howſoever it is contracted, whether by the fibers from the clavicle alone, or by the ſpinall alone, or by both at once, it alwaies lifts and heaves the arm upwards. The other which is his aſſociate deſcends from the gibbous part of the ſhoulder-blade, contained between the upper rib thereof, and the ſpine between the proceſſes *Acromion* and *Coracoides*, to the neck of the arm; and this we wil call the *Epomis* or *Scapularis*; that is, the ſhoulder muſcle. But the firſt and larger of the two muſcles, which draw the arm backwards, ariſes from the greateſt part of the utter lip of the gibbous part of the ſhoulder-blade, which is under the ſpine thereof, and lying upon the blade it ſelf, it goes into the hind part of the arm above the neck thereof. The other which is contiguous to it and his partner in working, but leſſer, paſſes from the upper and exterior part of the lower rib of the ſhoulder-blade, and thence as it were in ſome ſort extending it ſelf upon the gibbous part thereof neer unto that rib, it goes into the arm. This muſcle ſeems to be the ſame with the former, being fleſhy without even above the top of the ſhoulder. One and the leſſer of theſe two which draw downwards, enters out from the ſtreight line of the lower rib of the blade, and goes into the lower part of the arm about the neck thereof. The other called the *Latiſſimus* or broadeſt, aſcends from the ſpines of the holy-bone, of the loins, and often alſo from the nine lower of the cheſt, by the lower corner of the ſhoulder-blade into which is inſerted by a membranous tendon, as alſo it is into the inner part of the arm neer unto neck by another ſtrong tendon; whereupon this muſcle is called a common muſcle of the ſhoulder and arm. But when this muſcle happens to be wounded, the arm cannot eaſily be ſtretched forth, or lifted up.

The *Deltoides*.

The *Epomis* or *Scapularis*.

## CHAP. XXVI.

*The deſcription of the bones of the Cubit and the muſcles moving them.*

AFter theſe muſcles, follow thoſe which bend and extend the cubit, but becauſe their inſertion cannot be fitly demonſtrated, unleſſe the bones of the cubit be firſt deſcribed; therefore firſt of all we will delineate the bones themſelves. But verily leſt this doubtful word cubit ſhould cauſe obſcurity; firſt we muſt note, that it hath a threefold ſignification, for ofttimes it is uſed for all that part of the hand which lies between the arm and wriſt, oft-times for the lower bone of this part, ſometimes for the upper part of this bone which is turned within the orb or cavity of the arm (no otherwiſe than a cord in the wheel of a Pulley) and this is called the *Olecranon*. Here truly we uſe this word Cubit in the firſt ſignification. Wherefore we ſay the cubit is compoſed of two bones, the one of which we cal the *Radius* or wand, or the leſſer *Focile* of the arm; the other we properly cal the Cubit or El. Theſe two bones ſtick together at their ends being firmly bound together by ſtrong ligaments; but the middle parts of them are a prety way diſtant from each other, and chiefly towards their lower ends, for the better ſituation and paſſage of the muſcles and veſſels from the inner ſide to the exterior, as ſhall be ſhewed in fit place. The wand hath two *Epiphyſes* or Appendices, the one at the upper end, the other at the lower. The upper is round and hollowed on the ſurface like a baſon, it receives the fore proceſſe of the bone of the arm, bouud to the ſame by ſtrong ligaments, deſcending as well from that proceſſe of the arm, as the *Olecranon* into the circumjacent parts of this appendix of the wand. This connexion is made for this uſe, that we may turn our hand upwards and downwards by the cubit turned and twined about this proceſs, But the lower appendix of this wand is hollowed on the inſide that ſo it might more commodiouſly receive the bones of the wriſt, but gibbous without, that it might be ſafer; now this wand is ſofter and thicker at the lower end, but leſſer and harder above, where on the inſide it hath a ſwelling out, whereby to receive the muſcle *Biceps*, beſides on the outſide of the middle thereof it is ſomewhat gibbous and round, ſo to become more ſafe from the injuries of external bodies; but it is hollowed, or bended on the inſide for the better taking and holding any thing in the hand. But that ſide which lies next to the Ell is flatted for the fitter originall and ſeat of the muſcles; laſtly, it is ſeated upon the bone of the Cubit, or Ell, juſt againſt the thumb.

What is meant by the Cubit.

What the *Olecranum* is.

The 2 bones of the Cubit.

The two Appendices of the wand.

The figure and ſite of the wand.

But

But the Ell, or bone of the cubit properly and particularly so called, hath in like manner two appendices, the one above, the other beneath. The upper which also is the greater, is fitted to the orb of the arm in which it goes to and again for the extension and bending of the arm, no otherwise than a rope runs in a pulley but that it turns not absolutely and perfectly round, which is caused by the two processes of unequall bignes, the which are therefore stayed in the holes or cavities of the bone of the arm, the greater processe which we called *Olecranon* is letted by the exterior hole that so the extension of the arm can be no further, but the lesser processe by the inner hole, makes the bending thereof the lesse perfect. The composure of these bones is by *Ginglymos*, and it is strengthned not only by common ligaments comming from the muscles, which move the bones themselves, but also by proper ligaments descending from the processes of the arm and the lips of the holes and cavities standing about the appendix of the cubit. The other lower and lesser appendix is in some sort hollow on the inside for the fitter receiving the bones of the wrist, but the outside is round and ends in a point, whence it is called by the Greeks *Styloides*. But now this Ell (contrary in this to the wand) is thicker towards the arm, but slenderer towards the wrist. And besides in the thicker part thereof it is hollowed or bended towards the inside, and in the same place is gibbous or bunching forth on the outside; but it is round and streight, unlesse on that side which lies next the wand, for the rest, it is hollow and full of marrow like the wand. The site of the *Radius* or wand is oblique, but that of the cubit or Ell is right, that the arm might be the better and more easily moved; because the motion by which the arm is extended and bended is according to a right line, but that by which the inside of the hand is turned upwards and downwards, is performed obliquely and circularly. Wherefore it was expedient that the wand should be oblique, and the cubit streight; for the cubit-bone is appointed for to extend and bend the arm, but the wand to perform the wheeling and turning about thereof; and this is the cause that it was fitting there should be a different connexion of these bones with the arm. These things were fitting to be spoken concerning the nature of these bones, that in the cure of fractures we may work the more safely and happily, taking indication from that which is agreeable to nature: wherefore now it remains that we come to the description of the muscles which are seated in the arm, the cubit-bone, or Ell. These are four in number, two extending it, and two bending it. The first of the benders is called *Biceps*, by reason of its two heads, the one whereof descends from the *Coracoides*, that other from the lip of the cavity of the shoulder-blade by the fissure or clift of the head of the bone of the arm. These two heads under the neck of this arm becoming fleshy, are firmly united at the belly and midst of the arm, and thus united are at the length implanted by a strong tendon to the inner protuberation of the wand. The other is called the *Brachiæus*, by reason of the strait coherence thereof with the bone of the arm; this fastned under the *Biceps* descends obliquely on the back and upper part of the bone of the arm into the top of the wand and the inner side of the Ell. But the first of the extenders is called the *longus* or long muscle, this descends from the lower rib of the shoulder, and cleaving to the bone of the arm goes thither (fastned and as it were alwaies most straitly joined with his fellow muscle, specially neer the cubit) where you shall presently hear. The other termed the *Brevis* or short Muscle, being the companion of the long, descends on the hind part of the neck of the bone of the arm, as it were growing to, and lying under the former long muscle, so that making one common broad tendon outwardly fleshy, inwardly nervous, they are inserted into the *Olecranum*, so by mutuall assistance to extend the cubit.

The Appendices of the bone of the cubit.

The figure of the cubit bone or Ell.

The muscles moving the cubit.

The *Biceps*, or two-headed muscle.

The *Brachiæus*.

The *Longus*.

The *Brevis*.

## CHAP. XXVII.

### *The Description of the Bones of the Wrist, Afterwrist and Fingers.*

WE said before that the Hand taken more particularly and properly, is divided into the Wrist, Afterwrist, and Fingers, and that the hand in this signification is bounded by the ends of the bones of the cubit and fingers. All the parts of the wrist, which it hath common with the afterwrist, have been already also plentifully explained, this only remains to be noted, that the skin as well of the hands as of the feet, is of a middle nature between pure flesh and pure skin, no otherwise than that which covers the forehead, but that this which covers the palms of the hands and soles of the feet is unmoveable; but it is most thick, especially on the feet, lest it should be easily offended by continuall going. Besides the common parts, the wrist is composed of eight smal bones mutually knit together in a certain order, and by *Diarthrosis* with the two bones of the Cubit, but mutually and amongst themselves by *Synarthrosis*, by interposition of gristles and ligaments as well common, that is, coming from the muscles, as proper, descending alwaies from the upper to the lower. But these same bones are some lesse than othersome; besides, they are hard and without marrow, gibbous on the outside for the security and comlinesse of the hand, but hollow on the inside for to give way to the tendons going into the fingers. These bones are disposed in two ranks.

What the Hand properly so called is.

The firſt rank contains only three, but the ſecond five. The three of the firſt rank are thus arrayed, or placed, that one of them may receive the Appendix *Styloides*, of the cubit; the other the Ell and the wand together, aud the third may be received by the wand. But three of the five bones of the ſecond order ſuſtain the four bones of the afterwriſt and are knit to the ſame by *Synarthroſis*, after which manner of connexion they are joined to the bones of the firſt rank; the fourth ſuſtains the firſt bone of the thumb, to which alſo it is coarticulate by *Synarthroſis*; the fifi and laſt is ſeated on the inſide againſt the Ell, chiefly above that bone of the firſt order, which receives the Appendix *Styloides* of the cubit, this is the leaſt and weakeſt of them all by reaſon of its griſtly ſubſtance, which makes the ring with certain ligaments running from one of the inner ſides of the wriſt to the other.

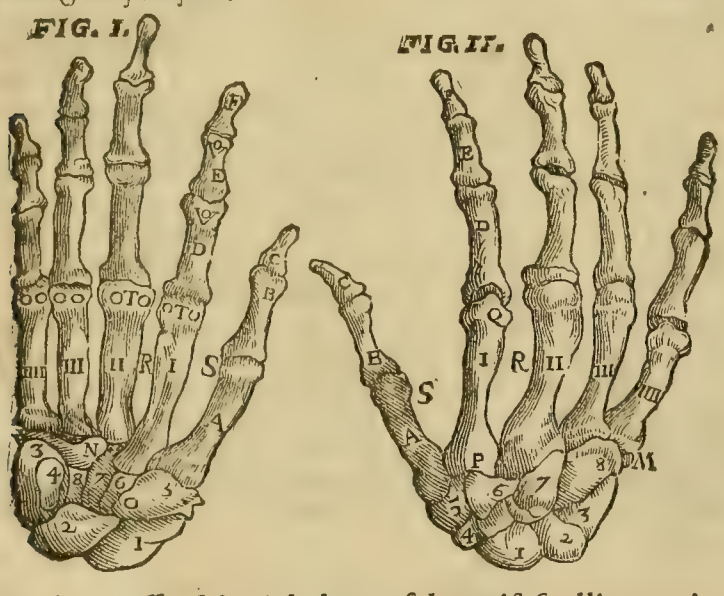
What the *Annulus* or ring is.

This ring is placed there, as well for the preſervation of the ſinews, veins, and arteries paſſing under it (leſt when we lean upon our hand or wriſt, theſe parts ſhould be hurt by compreſſion) as alſo for the commodity of the action of the muſcles bending the finger, which in the performance of their action and the contracting themſelves might deform the hand by their paſſing forth of the cavity of the wriſt. For what attraction ſoever is made by ſtrings, if it be free and not hindred, is according to a ſtreight line.

The bones of the Afterwriſt.

Now follow the bones of the ſecond part of the hand, or of the afterwriſt. Theſe are four in uumber, gibbous without, but arched within, or hollow in the middle; for hence is the palm of the hand, or certainly the greater part thereof; their ends next the fingers are ſomewhat remote from each other, that in theſe clifts the muſcles *Interoſſes* might find a place and ſeat. But theſe ends have each an Appendix, as you may perceive in the Sceleton of a child. But you muſt note that by the firſt bone of the wriſt or afterwriſt, wee mean that which is in the foreſide of the hand, that is to ſay, that in the wriſt which lies under the thumb, and that in the afterwriſt, which is ſeated under the fore finger, as theſe which keep in order the fingers which exceed the reſt in neceſſity and dignity.

*The Figure of the bones of the Hand. The* 1. *ſhews the inſide of the right hand, and the* 2. *ſhews the back ſide of the ſame.*




The Charact. 1, 2, 3, 4, 5, 6, 7, 8. ſhew the eight bones of the wriſt.
*A*, 1, 2. The firſt bone of the Afterwriſt lying under the thumb.
I. II. III. IIII. The 4 other bones of the Afterwriſt annexed to the fingers.
*B*, *C*, The two bones of the thumb.
*D*, *E*, *F*. 1, 2. The 3 bones of the forefinger which are the ſame in the other fingers.
*M*, 1, 2. A little bone ſometimes faſtned outwardly at the joint of the eight bone of the wriſt.

*N*, 1. A proceſſe of the eight bone of the wriſt, ſwelling out into the ball of the hand.
*O*, 1. A proceſſe of the fifi bone of the wriſt, from which a ligament proceeds.
*P*, 2. An appendix of the bones of the wriſt, by which they are articulated to the afterwriſt.
*Q*, 2. Another Appendix which with its head entreth into the cavity of the finger.
*R*, 1, 2. The ſpace between the bones of the afterwriſt.
*S*, 1, 2. Two little ſeed-bones ſet on the inſide and outſide of the firſt joint.
*T*, 1. Two ſeed-bones in the firſt of the four fingers.
*VV*, 1. One ſeed-bone in the ſecond and third joint of the fingers.

The bones of the fingers.

After theſe follow the fifteen bones of the fingers; that is, three in each, which are hollow and fiſtulous, full of a thin and liquid marrow, and not of groſſe and thick, as in the arm and thigh. They are outwardly gibbous, but inwardly hollow and flat for the fitter ſeat of the tendons aſcending alongſt the fingers on the inſide even to the upper joint. The which that nature might the better ſtrengthen and preſerve, it hath produced from the lips of the inner cavities of theſe bones a membranous and ſtrong ligament, which running overthwart from one ſide to the other doth ſo ſtraitly cloſe the tendons to their bones, that they cannot goe forth of their places, or incline to either ſide. They are connexed on the outſide, that they might be more fit to hold any thing. But for the firſt bones of the 4 fingers and thumb, four are joined together with ſo many bones of the afterwriſt by *Synarthroſis*, for the bones of the afterwriſt are moved by no manifeſt motion; the fifi is knit to the ſecond rank of the bones of the wriſt, therefore that bone cannot be attributed to the

after-

afterwriſt, as ſome have written, ſeeing it hath manifeſt motion and is knit by *Diarthroſis*, but the bones of the afterwriſt are only faſtned by *Synarthroſis*. For the ſecond and third rank of bones of the fingers, they are knit the ſecond to the firſt, and the third to the ſecond by *Diarthroſis* and *Arthrodia*, becauſe beſides the manifeſt motion they have, they receive each other by a ſuperficiary cavity, as thoſe of the firſt rank, the bones of the afterwriſt, and thoſe of the ſecond rank, them of the firſt; thoſe of the third them of the ſecond. And al the bones of the fingers are larger and thicker at their baſis, but ſmaller towards the ends, and they are bound by ligaments eſpecially proper, which (as we ſaid formerly) deſcend from the firſt to the ſecond; ſo that the laſt bones ſeeing they have not to whom to communicate their nerve, make and produce nails thereof: Wherefore the nails are generated by the fibers of the ligaments, and the excrement of the tendons which are terminated at the bottom of the nails. Now remain the *Oſſa Seſamoidea*, or ſeed-bones: theſe are 19 in number in the inner joints of each of the hands, and as many in each foot, *viz.* two in the firſt joint of the four fingers and in the ſecond of the thumb, and one in each of the reſt. For the inner ſide of the joints, you may for the moſt part obſerve one in each of them; yet in the ſecond joint of the thumb there be two, above the two tendons, which are ſomewhat griſtly.

Whence the nails are generated.

The *Oſſa Seſamoidea*, or ſeed-bones.

They are made for this uſe, that they firm and ſtrengthen the joints, ſo that the bones of the fingers may not be turned awry, or thruſt forth of their places by ſtrong and violent motions, as it ſometimes happens in the whirlebone of the knee. They are called *Seſamoidea* from the reſemblance they have to the ſeed of *Seſamum* which is ſomewhat long and flat.

Their uſe.

## CHAP. XXVIII.

### *Of the muſcles which ſeated in the cubit move the Wand and with it the Hand.*

NOw muſt we deſcribe the muſcles of the formerly deſcribed parts; that is, thoſe which are ſeated in the cubit, which are carryed to the inſide of the hand, and thoſe which are called the *Interoſſes*. Now the muſcles of the cubit are 14, ſeven externall and ſeven internall; two of the ſeven externall doe primarily twine or turn up the Wand, and ſecondarily or by accident turn the palm of the hand upwards, whereupon they have called them *ſupinatores* or turners up of the hand; two extend the wriſt, whereupon they are named *Carpitenſores* or the wriſt-extenders; two the fingers, whence they are ſtiled *Digitamtenſores* or fingerſtretchers; to conclude, the ſeventh and laſt is termed *Abductor* or *Obliquator externus*. The firſt of the two *ſupinatores* is called the Long, or Longeſt, becauſe it deſcends from the outſide of the arm above the proceſſes thereof, and is inſerted by a round and ſtrong tendon into the lower Appendix. The other deſcends obliquely from the outward and upper proceſſe of the arm, and is inſerted at the third part of the wand by a membranous and fleſhy tendon before and on the inſide thereof. The upper of the two extenders of the wriſt, deſcending above the wand from the external and upper proceſſe of the arm, is inſerted by two tendons into the firſt and ſecond bone of the afterwriſt, which ſuſtain the fore and middle fingers.

The muſcles of the cubit.

*The Supinatores.*

*The Carpitenſores.*

*The Digitumtenſores.*

*The Obliquator externus.*

The firſt of the *Supinatores.*

The ſecond.

The upper of the *Carpitenſores.*

The other and lower, deſcending from the ſame place as the former, above the cubit is inſerted into the fourth bone of the afterwriſt which bears up the little finger. Theſe muſcles whileſt they move alone, that is, each with his Antagoniſt, to wit, the wriſt-benders, they move obliquely upwards or downwards, the whole hand properly ſo called. The firſt and greater of the extenders of the fingers, or finger-ſtretchers ariſing from the *Olecranum*, or bone of the cubit, deſcends ſuperficiarily between the two bones of the cubit even to the wriſt, in which place it is divided into four tendons, which paſſing under the ring ſeated there end (each diſtinguiſhed by a common ligament above the bone of the afterwriſt) in the laſt joints of the four fingers, adhering neverthele ſſe firmly to the bones, which are above theſe joints.

The lower.

The greater of the *Digitumtenſores.*

The other which is the leſſer, ariſing almoſt in the middle of the wand, goes obliquely to the thumb into which it is inſerted by two tendons; the one thicker which is inſerted into the root thereof, and draws it from the other fingers; the other ſlenderer continued even to the upper joint thereof, and by its action extending the thumb.

The leſſer.

The ſeventh which is the *Abductor* or *Obliquator*, is ſeated at the hind part of the hand; that is, towards the little finger; we have often found this divided iu two, yea verily we have found it trifide, or divided into 3. this year in three or four dead bodies, one portion thereof went to the lower ſide of the ring-finger with two Tendons, the other in like manner to the middle and forefingers, and the third to the thumb.

The *Obliquator*, or *Abductor externus.*

And for all that it is thus divided, yet ſome have taken and accounted it for one muſcle, becauſe it hath one originall and action, which is to draw the fingers backwards, ſome have added to this the extender of the thumb by reaſon of their common originall; and thus of four muſcles they have made one divided into ſeven tendons, diſtributed, as is formerly ſhewed. But when the *Obliquator* of the ring-finger is wanting, as it often happens, the extender of the finger ſupplies that defect by certain productions of tendinous ſtrings. But ſome alſo have written, that this muſcle which we ſaid hath ſeven tendons,

is only a production of the deep fore muſcle, which ſhould be ſent through the ſpace between the bones of the cubit; yet I had rather make it a muſcle of it ſelf, by reaſon of its ſtrait adheſion with the bones of the arm and wand. And let thus much ſuffice for the external muſcles of the cubit, which you may comprehend in the number of ſeven, as we have done; or in ſix, if you take away one of the 4. or in nine, if you had rather reſolve it into 4. with *Galen*; or in eight, if you divide this muſcle only into three. For in very deed the *Abductor* or *Obliquator* of the ring-finger is not often found in men.

The muſcles of the inner part of the cubit.

Now muſt we come to the inner muſcles of the cubit, the firſt of which compaſſes the skin of the palme of the hand, whence it is called the *Palmaris*. The ſecond and third joined by the communion of their action turn down or prone the wand, and conſequently the hand, ſo that the palme looks towards the feet, whereupon they are called *Pronatores*.

The *Palmaris*.

The 4. and 5. joined alſo in affinity of action bend the wriſt, wherefore they are named *Carpiflexores*, wriſt-benders. The ſixt and ſeventh are appointed to bend the firſt, ſecond, and third joints of the fingers, wherefore they are termed *Digitumflexores*, *Fingerbenders*. For their originall; the *Palmaris*, the leaſt and uppermoſt of them all, deſcends fleſhy from the hind proceſſe of the inner arm, and a little after ending in a long and ſlender tendon, it is ſpent in the skin of the palm of the hand even to the roots of the fingers. For it was neceſſary that this skin ſhould ſtraitly cohere with the ſubjacent parts, not only for the fitter taking or comprehenſion of any thing, leſt that skin in holding ſhould be wrinckled and drawn away from the palme and fingers, and ſo be an impediment; but beſides that the hand might have a more exact ſenſe to diſtinguiſh of hot, cold, moiſt, dry, ſmooth, equall, rough, ſoft, hard, great, little, and ſuch other qualities. Then follow the two *Pronatores*, of which one called the round, comes obliquely from the inner ſide of the hind proceſſe of the arm almoſt to the middle of the wand, to whith it adheres by a membranous and fleſhly tendon, even to the place appointed for inſertion. The other ſquare three or four fingers broad, yet ſomewhat ſlender, ſeated within under all the muſcles which deſcend on the inſide to the wriſt or fingers, upon the ends of the bones of the cubit, aſcends tranſverſe from below the Ell, unto the top of the wand, where it ends in a membranous tendon.

The *Pronatores*.

The *Carpiflexores*.

Both the *Carpiflexores*, or wriſt-benders, ariſe from the hind, but inner proceſſe, and deſcend obliquely, (the one more, or leſſe than the other) the one alongſt the Ell, but the other alongſt the wand; and that which deſcends alongſt the Ell, is inſerted into the eight bone of the wriſt, which we ſaid made part of the ring; the other which followes the wand is inſerted with his greater part into the bone of the wriſt, and with the reſt into the firſt bone of the after-wriſt which ſuſtains the fore finger.

The *Digitumflexores*.
The *Sublimis Digitumflexor*.

Now remain the *Digitumflexores*, or Fingerbenders, which becauſe they lye upon one another, the upper is called the *Sublimis*, but the lower the *Profundus*. The *Sublimis* or upper, ariſing from the inner part of the hind proceſs of the arm, and from the upper parts of the Ell and wand, deſcends between theſe two bones of the cubit even to the wriſt and ring; divided into 4 tendons it is inſerted into the ſecond dearticulation of the four fingers, which it bends by the force of this his proper inſertion; as alſo the firſt, as well by the power of the common ligament, as by certain fibers coming from it, which it ſends thither by the way in its paſſage. But theſe 4 tendons neer unto this their inſertion are divided into two, ſo to give paſſage and add ſtrength to the tendons of the deep muſcles deſcending into the third and laſt joint of the fingers.

The *profundus Digitumflexor*.

But this ſame *Profundus* or deep muſcle ariſing from the upper and inner parts of the Ell and wand, deſcends between theſe two bones under the *Sublimis*, alſo undivided even to the wriſt, where it is divided into 5 Tendons which it brings forth under the common ligament, and the diviſions of the tendons of the *Sublimis* even to the laſt joint of the fingers, which they bend, by this their proper inſertion, as alſo the bones of the firſt and ſecond joints of the fingers by the means of the common ligament and fibrous productions which they beſtow upon them by the way. Beſides theſe forementioned there is ſeen alſo a certain membranous ligament which engirts the tendons in the compaſſe of the fingers.

## CHAP. XXIX.

### *Of the Muſcles of the inſide of the hand.*

The number of the muſcles of the inſide of the hand.

THe muſcles of the inſide of the hand are 7 in number; the firſt is called *Thenar*, becauſe it makes the greater part of the Palme; the ſecond from the ſite is called the *Hypothenar*; the third the externall *Abductor* of the thumb. The four other are called by reaſon of their figure the *Lumbrici* or wormy muſcles, or the *Abductores*, or Drawers of the four fingers to the thumb. Now the firſt called *Thenar*, thicker than the reſt, ariſes from all the bones of the afterwriſt, taking its beginning from that bone which bears up the ring finger, whence aſcending alongſt the Vitall line even to the end thereof at the firſt bone of the afterwriſt ſuſtaining the fore finger, and it is at length inſerted into the laſt joint of the thumb by the longeſt fibers, but by the middle

The *Thenar*.

middle and ſhorteſt fibers almoſt into all the inner part of the firſt bones of two joints, and by reaſon of this, the thumb is drawn to the other fingers, and from them again by his lower originall.

Some divide this muſcle into three, by reaſon of his divers actions, making the firſt to ariſe from the root of the bone of the afterwriſt which bears up the ring finger; but the other from that middle bone of the afterwriſt which ſuſtains the middle finger; but of the third, from the upper end of that bone which underprops the fore finger, and that the inſertion of them all, is, as we formerly mentioned. But the former opinion likes me better, both for ſhunning confuſion, and abbreviating the doctrin of the number of muſcles.

The *Hypothenar* ariſes from the fourth bone of the afterwriſt, and that bone of the wriſt which ſuſtains it, and then with its longeſt fibers, it is inſerted into the ſecond joint of the ring finger, and by the ſhorteſt into the firſt, through which occaſion, as alſo in reſpect of its twofold action, ſome have divided it into two, that the one of them might lead it from the reſt, aud the other might draw it to the thumb. *The Hypothenar.*

The third the externall *Abductor* of the thumb, deſcends from the firſt bone of the afterwriſt, into the firſt and ſecond joint of the thumb; wherefore ſome have divided it into two. The *Lumbrici*, or four externall *Abductores* of the fore fingers ariſe from a membrane, inveſting and binding together the tendons of the *Digitum flexores*, or fingerbenders, and at length on the ſides towards the thumb even by a ſmall tendon, running even to the ſecond joint of the four fingers. *The externall Abductor of the thumb. The Lumbrici.*

Now the *Interoſſes* of the afterwriſt, remain to be ſpoken of; theſe are ſix, two in each of the ſpaces between the fingers, one internall, the other externall, of which the internall deſcending with oblique fibers from the ſide of the firſt bone of the afterwriſt, goes alſo into the ſides of the fingers, that ſo it may the more cloſely bind together the bones of the afterwriſt, whoſe action is manifeſted when we thruſt our fingers into a ſtrait glove, or when we bend our hand. Some think that it helps alſo the drawing of the fingers towards the thumb. The externall aſcends alſo by oblique fibers from the ſides of the ſecond bone of the afterwriſt, to the firſt joints of the fingers, interſecting the internall which we now deſcribed after the manner of the letter X, for to extend the palm of the hand, and help the drawing away of the fingers from the thumb. *The Interoſſei.*

Here concluding the deſcription of the muſcles of the whole hand taken in generall, you ſhall note that they are 39. in number, that is, eight appointed to move the arm; four ſet to move the cubit in generall; ſeven ſeated on the outſide of the cubit, and as many on the inſide in the ſame cubit, moving the wand, and with it the hand; ſeven on the inſide of the hand: and laſtly, the ſix *Interoſſes*. Some encreaſe this number, ſaying, there are nine on the externall part of the cubit, and eleven on the inſide of the hand. *The number of the muſcles of the whole taken in generall.*

## CHAP. XXX.

### *A Deſcription of the Leg taken in generall.*

AFter the hand followes the deſcription of the Leg. Wherefore to take away all doubtfulneſſe, we will firſt define the leg; then divide it into the parts more and leſſe compound; thirdly, we will proſecute all things common to all theſe parts; fourthly, thoſe which are peculiar to each; and then, God willing, we will give an end to our Anatomy.

Now this word *Crus*, or leg, is uſed two manner of wayes, that is, either generally or ſpecially, and ſpecially again after two ſorts, that is, either abſolutely and ſimply ſo, or with an adjunct. It is ſimply taken for all that which is between the knee and the foot. But with an adjunct for the greater bone thereof. But the leg taken in generall, is the inſtrument of going, containing all whatſoever is from the hips, to the very ends of the toes. It is divided into three great parts, that is to ſay, the thigh, the leg, or ſhank, and the foot. By the thigh we mean that which lies between the hip and the knee. By the leg, properly ſo called, or ſhank, that which is contained between the knee and the foot. By the foot all from thence to the ends of the toes. *The diverſe acception of the leg. The thigh. The leg or ſhank. The foot.*

Again, they divide the foot into three parts; that is, the *Tarſus* or inſtep, the *Pedion* or top of the foot, and the *Digiti pedum*, or toes. We underſtand by the inſtep, that which is contained in the firſt ſeven bones, which anſwers in proportion to the wriſt of the hand. By the top of the foot, that which is comprehended in the five following bones, which is anſwerable to the afterwriſt. That which remains, we call the toes. But becauſe all theſe parts have other common and proper parts, we will only follow the diſtribution of the veins, arteries, and nerves; ſeeing we have ſufficiently explained the reſt, when we deſcribed the containing parts of the body in generall. *The diviſion of the foot. The inſtep. The top of the foot. The toes.*

CHAP.

## CHAP. XXXI.

### *A Deſcription of the Crurall vein.*

The beginning of the Crurall vein. The two branches thereof.

THe crurall vein begins then, when the hollow vein paſſing forth of the *Peritonæum*, and ſtretched to the hanch bone, and the ſides of the *Pubis* in the groin, is firſt divided into two large branches, the one of which deſcends on the inſide, alongſt the bones of the whole leg, together with the artery and nerve; the other runs down outwardly and ſuperficially alongſt the leg, between the fat lying under the skin, and the muſcles even to the foot, and is ſpent in the skin thereof. This becauſe it is alwaies apparent and manifeſt, is called properly by the Greeks *Sapheia* but commonly *Saphena*.

By what veins, the matter cauſing thoſe tumors called *Bubones* flow down.

This vein by the way preſently at its originall is divided into two branches, the one internall, the other externall; of which the internall is ſpent upon the *Bubones*, and other glandules of that place and the skin, and by this branch come the defluxions called *Bubones*; the other branch is waſted in the fore and utter skin of the upper part of the thigh; then a little lower, that is, about the bredth of three or four fingers, it is gathered again into one branch made of many little ones, which is ſpent in the fore and hind skin of this thigh. Thirdly, a little below the middle of the thigh it is again divided into two other branches, of which the one goes into the skin on the foreſide, and the other on the hindſide. Fourthly, it is diſtributed by two other ſmall ſprigs into the skin, on the fore and hind part of the knee; whith oftentimes are not found, eſpecially when the *Poplitea* or ham vein, is ſomewhat larger than ordinary. Fiftly, a little below the knee, it produces two other branches, lying upon each other in their paſſage out into the fore and hind skin of that place. You muſt note, that branch which runs into the skin of the hind part, is carried by a certain other ſprig, which it produces, into a branch of the *Poplitea* paſſing forth of the two twin muſcles. Sixtly, in the bigger part of the calf of the leg, it is divided into two other branches, which in like manner are diſtributed into the skin, as well in the foreſide as the backſide of the leg.

Where and in what diſeaſes, the *Sapheia* muſt be opened.

At length after many other diviſions, which for brevitie ſake I omit, when it arrives at the fore and inner ſide of the ankle (where it is commonly opened in the diſeaſes of the parts below the midriffe which require blood-letting) it is parted into two other branches, the leſſer of which deſcends to the heel; the other in many ſprigs is ſpent upon the skin of all the upper and lower part of the foot and toes.

To what places, and by how manifold diviſions the internall branch of the crurall vein goes.

The ſecond branch of this crural vein, which we ſaid deſcends within together with the artery and nerve, even into the foot, is divided; firſt, piercing ſomewhat deep in, it produces four divarications; one internal deſcending below the original of the into *ſaphia* the muſcle called *Obturator externus*, and into certain other external muſcles. The three other run outwardly, the firſt towards the huckle-bone, by which the *Iſchias* is made, the two other into the fore muſcles of the thigh, neither are theſe ſprigs far remote from one another. Secondly, al that branch is divided into two other branches, the one above, the other below, an artery alwaies accompanying it; the lower of which is ſpent upon many of the hinder muſcles of the thigh ending nigh the ham. The upper, beſides, that it beſtows many branches upon the fore and inner muſcles of the thigh; deſcending to the ham, it produces the *Poplitea* or ham vein, made ſometimes of two branches, the one proceeding from above, and the other from below. This *Poplitea* deſcending by the bending of the ham, is ſpent one while upon the skin of the calf of the leg, another while upon the knee, otherwhiles encreaſed with branches of the *Sapheia*, it goes on the outſide of the ankle to the skin, on the upper ſide of the foot, and ſometimes on the lower.

*Iſchiadica vena.*

*Muſcula vena.*

*Poplitea vena.*

Thirdly, a little below the original of the ham vein, and under the bending of the knee, it brings forth the *Suralis*, which is beſtowed upon the muſcle of the *Sura*, or calf of the leg, and upon the skin of the inner ſide thereof, and of the foot continued ſometimes even to the inner part of the great toe.

*Suralis vena.*

Fourthly, under the head of the hinder appendix of the bones of the leg, it produces between theſe two bones, another vein, which nouriſhing the fore muſcle of the leg, is conſumed upon the foot.

Fiftly and laſtly, it brings forth the *Iſchiadica major* or greater *Iſchias*, which is divided into two branches of an unequall bigneſſe; the larger whereof, from his originall deſcending alongſt the inner part of the leg bone, inſinuates it ſelf under the muſcles of the calf, between this and the heel, into the ſole of the foot, upon which it is waſted, divided into ten ſmall ſprigs, two for each toe; the other being the leſſer deſcending alongſt the *Perone*, or ſhin-bone, is conſumed between it and the heel, yet ſometimes it is produced, not only even to the muſcle the *Abductor* of the toes, but alſo by five ſurcles, even to the fourth toe, and the ſides of the middle toe.

*Iſchiadica major.*

## CHAP. XXXII.

*The Distribution of the Crurall Artery.*

THe crurall artery arising from the same place whence the crurall vein proceeded, and descending with the internall crurall vein, is distributed as followeth.

First, into the muscle of the thigh, which spreading it self through the muscles thereof meets with the utmost *hypogastrica*, descending with the vein through the common hole of the huckle and share bone, and is joined with it. *Arteria musculi.*

Secondly, when it arrives at the ham, between the *Condylos* or processes of the leg, it sends two branches into the knee.

Thirdly, a little after it produces another branch, which it sends to the exterior muscles of the leg, and when it arrives at the middle of the leg, it is divided into two branches, between the twin muscles and *Solæus*, the one internall, the other externall; the internall, some surcles communicated by the way to the parts by which it passes, but specially to the joint of the ankle, stretches it self over the sole of the foot, between the lower extremity thereof and heel, whither when it arrives, it is divaricated into five surcles, of which it bestowes two on the great toe, two on the next, and one on the middle toe. The externall descending in like manner to the sole of the foot, between the *fibula* and the heel, besides other sprigs, which it may spread by the way, it produces one without on the joint of the ankle, another in the muscle, the *Abductor* of the toes, to the wrist and back of the foot. But the remainder is divided into five portions, of which two are sent to the fourth, and two to the little toe, and one to the middle.

## CHAP. XXXIII.

*Of the Nerves of the Loins, Holy-bone and Thigh.*

THere arise five conjugations of nerves from the loins, divided into externall and internal branches; the external are disseminated into the *Rachitæ* or chin muscles, the muscles *Semispinatus* and *Sacer* and the skin lying over them. The internall are sent into the oblique ascendent and transverse muscle of the lower belly, into the *Peritonæum*, into the loin and chest muscles arising there, but after a different manner; for some are absolutely carried thither, as the nerves of the first conjugation of the loins, and oftentimes also of the second, but that sometimes they send a small sprig to the testicles, when the Costall have sent none thither; but some lower are partly distributed there, and partly sent some other way; for the greater portions first united amongst themselves, then presently with the portions of these of the holy-bone, goe into the thigh, as we shall shew in the distribution of the nerves of the holy-bone. The five conjugations of the nerves of the loins.

Where the testicles have their nerves.

Now from the holy-bone, proceed six conjugations of nerves, reckoning that for the first which proceeds from the last *Vertebra* of the loins, and first of the holy-bone, and that the sixt which proceeds from the lowest part of the holy-bone, and the first of the rump; these conjugations of nerves are divided into externall and internall branches. The conjugation of the nerves proceeding through the holybone.

The lesser externall passing forth by the externall and hinder holes of the holy-bone, are distributed into the parts properly belonging thereto, to wit, the muscles and skin thereof; for every nerve by the law of nature first and alwaies yeelds to the neighbouring parts, that which is needfull, then presently to others as much as it can. An *Anatomicall* axiom.

Wherefore if thou wouldst know whence each part hath his vessels at the next hand, that is, the veins, arteries, and nerves, thou must remember the site of each part, and the course of the vessels, and to consider this, that the veins and arteries as speedily and conveniently as they can, insinuate themselves into the parts, sometimes at the head or beginning, somewhiles by the middle or extremes thereof, as there is occasion.

But a nerve principally enters a muscle at the head thereof, or at least not far from thence, but never by the tail, whereby it may easily be understood by what branch of each vein, artery, and nerve, each part may have nourishment, life, and sense. The other internall branches of the foresaid conjugations goe, especially the four uppermost united from their originall with the three lowermost of the loins, into all the leg, as you shall presently hear. But the two lower are consumed upon the muscles called *Levatores Ani*, the *Sphincter* muscle of the same place; besides, upon the muscles of the yard, and neck of the bladder in men, but in women upon the neck of the womb and bladder.

For these parts admit another in their bottom from the costall nerve, being of the sixth conjugation of the brain; these thus considered, let us come to the nerves of the thigh, which (as we said) from their first originall, as it were compacted and composed of the greater portion of the three inner and lower branches of the loins, and the four upper of the holybone, are divided in the thigh into four branches, of which the first and higher descending from above the *Peritonæum*, to the little *Trochanter*, is wasted upon the inward and superficiary muscles of the thigh, and the skin which covers them a little above the thigh.

The

The ſecond, deſcending with the crurall vein and artery by the groin, is divided into two branches like as the vein,the one internall, the other externall, of which the internall deſcending with the vein and arterie is ſent into the inner and deep muſcles of the thigh, ending above the knee.But the externall deſcending ſuperficially with the *Saphæia*, even into the foot,gives branches by the way to the skin which covers it.

The third ſeated under theſe former, paſſing by the hole common to the ſhare and hanch-bone,ſends certain branches to the groins,to the muſcles called *Obturatores*, to the *Tricipites*,and ſometimes to the muſcles of the yard,and it ends at the midſt of the thigh.

The fourth,which is the thickeſt,ſolideſt and hardeſt of al the nerves in the body,deſcending wholly from the productions of the holy-bone,and deſcending outwardly, between the lower part of the ſame bone,and the *Os Ilium*, or Hanch-bone to the thigh,beſtows certain ſprigs to the hind muſcles thereof proceeding from the protuberation of the *Iſchium* or huckle-bone,and in like ſort it gives otherſome to the skin of the buttocks,and alſo to the skin covering the forementioned muſcles.

A little after, it is parted into two branches deſcending undivided even to the bending of the knee,they both are communicated by divers ſurcles of the muſcles of the leg;yet ſo as the leſſer produces another branch from the reſt of the portion thereof deſcending on the fore part of the leg,alongſt the ſhin-bone unto the top of the foot,where it is divided into ten ſurcles ſcarce apparent to the ſight, two running to each of the toes. The other greater deſcending in like manner in the remainder of its portion by the hind part of the leg into the ſole of the foot, caſts it ſelf with the veins and arteries between the heel and leg bone, were firſt divided into two branches, each of which preſently parted into five, ſend two ſprigs to the ſides of the toes. And theſe are the moſt notable and neceſſary diſtributions of the veſſels and nerves;we purpoſely omit others which are infinite,and of which the knowledge is impertinent.

## CHAP. XXXIV.

### *Of the proper parts of the Thigh.*

HAving explained the common parts of the leg in generall; now we muſt come to the proper, beginning at the Thigh.The proper parts of the Thigh, are muſcles, bones,and ligaments. But becauſe the demonſtration of the muſcles is ſomewhat difficult, if we be ignorant of the deſcription of the bones from whence they ariſe, and into which they are inſerted; therefore we judg it worth our labour, firſt to ſhew the bones, and the dearticulation of theſe of the Thigh; beginning with theſe bones which are knit with the upper part of the holy-bone.

Of how many bones the *Oſſa Ilium* conſiſt.

And they are two in number,on each ſide one,commonly called the *Oſſa Ilium*;each of theſe is compoſed of three bones,of which one is the upper,another the lower and anterior,and the third the middle,and after a manner the poſterior. The upper by a particular name is

What the *Os Ilium* ſtrictly taken is.

called the *Os Ilium*, the hanch-bone, and it is the largeſt and biggeſt, having a griſtly Appendix in the compaſſe thereof, even to the connexion it hath with the other neighbouring bones, whoſe upper part we term the right line thereof;but the *baſis*, which is adjoined to it by *Symphyſis*, we call the lip or brow thereof, becauſe it ſtands both ſomewhat

What the line, lip,brow and rib of the *Os Ilium* are.

out and in,after the manner of the brow.But that which lies between the *baſis* and ſtreight line we name the Rib;this ſame upper bone hath two hollow ſuperficies,the one internall, the other externall. The connexion thereof by *Symphyſis*, is twofold, the one with the upper part of the holy-bone; the other with that bone we called the middle, and after ſome

The *Os Iſchium*, or huckle-bone

ſort the poſterior; which taking its beginning from the narrower part of the *Os Ilium*, makes that cavity in which the head of the thigh is received; this cavity the Greeks call *Cotyle*, the Latins *Acetabulum*, and it is ended by the ſide of the hole common to it,and the ſhare-bone; this middle, and in ſome ſort poſterior bone is called properly and particularly the *Os Iſchii*, or huckle-bone,and contains nothing elſe but the forementioned cavity, but that on the hind and lower part thereof, it brings forth a proceſſe, which adjoins it ſelf to the ſhare-bone at the lower part of the common hole, in which place it appears very rough and unequall, and it is called the tuberoſitie of the huckle-bone, at whoſe extremity alſo it brings forth a little head ſomewhat reſembling the proceſſe of the lower

The *Os pubis*, or ſhare-bone.

jaw called *Corone*. The third bone named *Os pubis* or the ſhare-bone,ſtretches it ſelf even to the higheſt part of the *pecten*,where meeting with the like bone of the other ſide, it is united to it by *Symphyſis*,after which manner alſo, all theſe three bones are united;it is reported, that this bone opens in women in their travel, yet hitherto I can find no certainty thereof.

You may perceive a manifeſt ſeparation of theſe three bones in the *Sceleton* of a child; for in thoſe who are of more years,the griſtles which run between theſe connexions turn into bones.

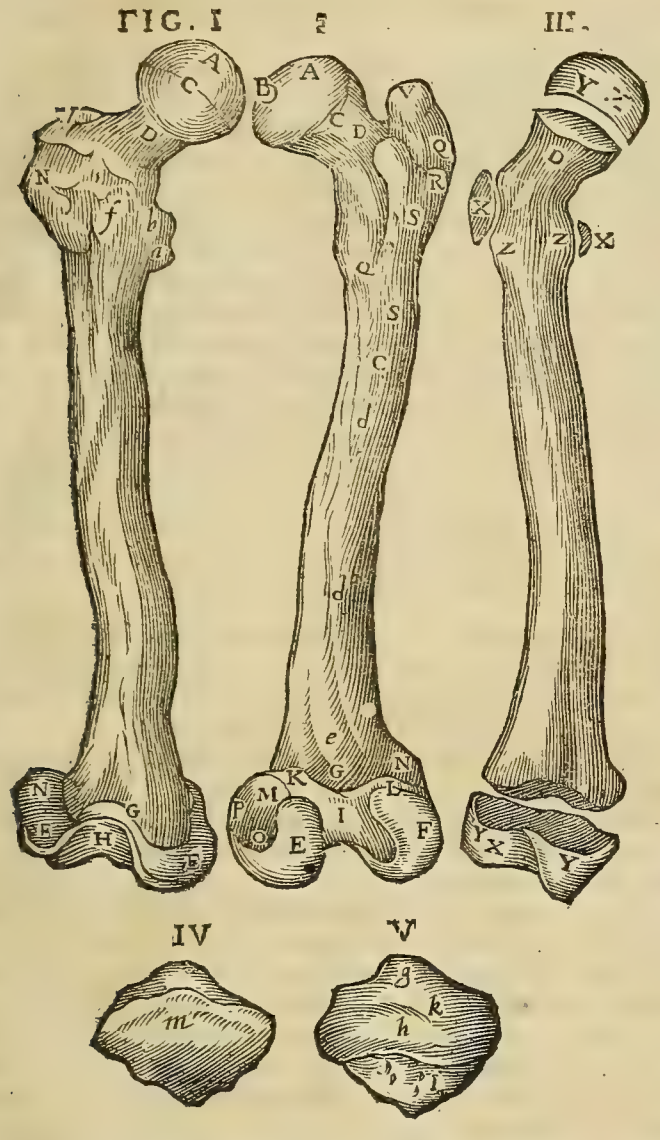
The deſcription of the thigh-bone.

Now followes the thigh-bone,the biggeſt of al the bones of the body;it is round,and ſo bended that it is gibbous on the exterior and forepart thereof,that ſo it might be the ſafer

from

from externall injuries; but on the hind and inner part, it is hollow or ſimous, like to the back of an Aſſe, whereby the muſcles might have a more commodious originall and inſertion.

*The figure of the Thigh-bone.*




*A* 1,2. The head of the thigh going into the cup of the hip-bone.
*B*, 2. A ſinus in the head of the thigh, into which is inſerted a round ligament.
*C* 1, 2. The conjunction of the appendix of the thigh with the bone it ſelf.
*D* 1, 2, 3. The neck of the thigh.
*E F* The two lower heads of the thigh.
*G* 1, 2. The conjunction of the lower appendix.
*H* 1, 12. A ſinus betwixt the two heads of the thigh.
*K* 2. A part of the lower head of the thigh, from whence the firſt muſcle of the foot doth proceed.
*L* 2. Another part from whence the ſecond and firſt muſcles ariſe.
*M* 2. Another part to which the Tendon of the fift muſcle of the thigh is infixed.
*N* 1, 2 A ſinus of the outward ſide of the head for the fourth muſcle of the leg.
*O* 2. A ſinus of the inſide through which the tendons doe paſſe.
*P* 2. A protuberation at which the ſaid tendons are reflected.
*Q* 2. The upper proceſſe of the thigh, and betwixt *Q* and *D* is the ſinus. *R* 1, 2. The union of the proceſſe with the thigh. *S S* 2. A rough line from the impreſſion of the externall proceſſes. *T* 1. The anterior impreſſion of the internall proceſſes, *e*, betwixt *T* and *V* another impreſſion higher than the former. *V*. 1, 2. The fourth impreſſion in the top of the proceſſe. *X* 3. Four *X*, ſhew the four appendices of the thigh. *Y* 3. Three *Y*, ſhew the three heads of the thigh. *ZZ* 3. Two proceſſes of the thigh. *a* 1. The interior proceſſe of the thigh. *b* 1. The conjunction of the proceſſe with the thigh, *c c* 2. A line deſcending obliquely from the inner proceſſe. *d d* 2. A line running through the length of the thigh. *e* 2. The largeneſſe of the thigh in this part. *f* 1. A roughneſſe from which the eighth muſcle iſſueth. *g*, *h* 5. A knub of the Whirle-bone going into the ſinus marked with *I*, which is betwixt the heads of the thigh. *i* 5. A ſinus fitted for the inner head of the thigh. *k* 5. A ſinus agreeing with the externall head of the thigh. *l*. 5. the lower aſperity or roughneſſe. *m* 4. The foreſide of the pattell or whirle-bone rough and unequall.

That ſimous part a little below the midſt thereof, is divided into two lines, the one whereof goes to the internall tuberoſity, the other to the externall of the lower appendix of the ſame thigh. Theſe are chiefly to be obſerved, becauſe the oblique fibers of the vaſt muſcles thence take their originall.

Beſides, this bone hath two appendices in the ends thereof, as eaſily appears in a childs thigh; the upper appendix makes the round head of the thigh it ſelf, which (as every other appendix) ſeated upon a long neck, is received in the cavity of the hanch-bone by *Enarthroſis*; it is ſtayed and faſtned there by two ſorts of ligaments, of which the one is common, proceeding from the muſcles, which deſcend from above, about the neck thereof; the other is proper, which is twofold, that is, one membranous and broad, proceeding from the

The two appendices of the thigh-bone.

the whole cavity of the orb, or cup, deſcending about all the head of the thigh, above the neck thereof; the other thick and round, deſcending from the ſecond cavity of the *Cotyle* it ſelf, which is extended, even to the common hole at the top of the head thereof.

The two proceſſes of the thigh-bone make the two *Trochanters.*

Beſides, under this head, that bone hath two proceſſes, the one great and thick, the other little and ſhort.

The greater ſeated in the hind part, is called the great *Trochanter*; the leſſer ſituate in the inner part, is named the little *Trochanter.*

But you muſt note, that the greater *Trochanter*, on the higher and hind part thereof, which looks towards the head of this bone, makes a certain ſmall *ſinus* or boſome, into which the twin muſcles and others, whereof we ſhal hereafter ſpeak, are implanted; we muſt alſo conſider the multitude of holes encompaſſing this neck, between the head and the two *Trochanters*, which yeeld a paſſage to the veſſels, that is, the veins, arteries, and nerves, into the marrow of the bone it ſelf, whence the marrow it ſelf becomes partaker of ſenſe, eſpecially on that part which is covered with a coat, and the bone lives and is nouriſhed.

Whence the marrow becomes partaker of ſenſe.

The other Appendix of the thigh, that is, the lower, is the greateſt and thickeſt, riſing as it were with two heads, which are divided by two cavities, the one ſuperficiary and on the foreſide, whereby it receives the whirl-bone of the knee; the other deep, and on the back part, by which it receives the griſtly and as it were bony ligaments, proceeding from the eminencie which is ſeen between the two cavities of the upper appendix of the bone of the leg, which *Hippocrates, lib. de fracturis*, calls in his tongue *Diaphyſis.*

## CHAP. XXXV.

### *Of the Muſcles moving the thigh.*

Their number.

THe muſcles of the thigh are juſt fourteen in number, that is, two bend it, whereupon they are called the *Flexores*, or benders; three extend it, whereupon they are called *Tenſores*, extenders; three move it inwards, driving the knee outwards, and drawing the heel inwards, as when we croſſe our legs; yet ſome make theſe three one, and call it the *Triceps*, or threeheaded muſcle. Six ſpread it abroad, and dilate it, as happens in the act of venery.

Four of theſe are called *Gemini* or Twins, by reaſon of the ſimilitude of their thickneſſe, originall inſertion and action; the two other are called *Obturatores*, becauſe they ſtop the hole which is common to the ſhare and back-bones.

The two *flexores.*

Now one of the two *Flexores*, being round, deſcends on the inſide with fibers of an unequall length from all the tranſverſe proceſſes of the loins, above the hind commiſſure of the hanch and ſhare-bones, and is inſerted into the little *Trochanter*; the other broader and larger from the origiuall paſſes forth of the whole lip, and inner brow of the hanch-bone, and filling the inner cavity thereof, is inſerted above the forepart of the head of the thigh, into the little *Trochanter* by a thick tendon, which it with the fellow muſcle lately deſcribed, produces even from the fleſhy part thereof, wherefore you need to take no great pains in drawing or plucking them away.

The three *tenſores*,

The three *Tenſores* or extenders, make the buttocks, of which the firſt being the thicker, larger, and externall, ariſing from the rump, the holy-bone, and more than half of the exteriour and hinder lip of the hanch-bone, is inſerted by obliqne fibers, ſome four fingers bredth from the great *Trochanter* at the right line, which we ſaid, reſembled an Aſſes back.

The ſecond, which is the middle in bigneſſe and ſite, deſcends from the reſt of the lip, and from the fore and outward rib of the hanch-bone, and above the midſt of the bone, is inſerted into the upper part of the great *Trochanter*, by a triangular inſertion above the upper and exterior part thereof.

The third being leſſer, ſhorter, and thinner, lying hid under theſe former, proceeds from the middle of the externall ſurface of the hanch-bone; and then is inſerted into the greater part of the right line of the great *Trochanter.*

Theſe three muſcles have a great and large originall, but a narrow inſertion, as it were by oblique fibers.

Three *Intromoventes.*

Then follow thoſe three muſcles which move the thighs inwards, ſtraiten and croſſe them, ſo that the knee ſtands forwards or outwards, but the heel is drawn inwards, as you may underſtand by their inſertion, although ſome think otherwiſe. But theſe three muſcles by their originall, partly fleſhy, and partly membranous, ariſe from the upper and forepart of the circumference of the ſhare-bone, and thence are inſerted into the hind line of the huckle-bone, ſome higher than otherſome; for the leſſer and ſhorter ſtayes at the roots of the little *Trochanter*, the middle deſcends a little deeper, the third with the longeſt of his fibers, deſcends even to the midſt of the line.

This if it be ſo, that is, theſe muſcles proceeding from the fore and upper part, to be inſerted into the hinder line of the huckle-bone, whilſt they alone perform their action, and draw the thighs together, they will turn them outwards, juſt ſo as when we put them acroſſe,

acroſſe, but they will not draw one heel to another,and put the heel outwards, for ſuch like motion is performed by the inner vaſt muſcle of the thigh, moving the leg. Now follow the ſix which move the buttocks.

The movers of the buttocks.

The firſt, and higher of the *Quadragemini*, or the four twin muſcles, paſſes forth of the commiſſure of the holy-bone,with the bone of the rump,or rather from the loweſt extream of the holy-bone,and thence it is inſerted into the cavity of the great *Trochanter* by a tendon of a ſufficient largeneſſe.

The ſecond proceeding from the hollow part or fiſſure, which is between the extremity of the huckle-bone,and the tuberoſity or ſwelling out of the ſame, is inſerted in like manner into the cavity of the great *Trochanter*.

The third aſcends from the inner part of the ſwelling out of the huckle-bone, a little above, between the two *Trochanters*, into the cavity of the greater of them.

The fourth and laſt, the loweſt and broadeſt of them all, proceeds from all the exteriour protuberancie of the huckle-bone,and thence is inſerted into the great *Trochanter*,and theſe four muſcles lie hid under the thick and more eminent part of the buttocks;wherefore that you may the better ſhew them, they muſt be turned up towards their originall.

The two *Obturatores* remain to be ſpoken of,that is, the internall and externall, both which ariſe from the circuit and circumference of the hole which they ſtop, which as we ſaid is common to the ſhare and huckle bone,but the internall aſcends to the exterior root of the great *Trochanter* by the middle fiſſure between the upper part of the protuberancy of the huckle bone, and the ſpine which ſtands up in the hinder baſis of the hanch bone.

The two *Obturatores*.

But the externall proceeds from the exteriour cavity,and the middle ſpace between the tuberoſity of the huckle bone and cavity thereof,and is inſerted into the lower part into the cavity of the great *Trochanter*, together with the *Quadragemini*.

If you would plainly ſee the exteriour *Obturator*, you muſt either cut off the beginning of the three-headed muſcle, or handſomely pluck it away, and then extend it, and turn it up; the internall is eaſily diſcerned when the bladder is taken away.

## CHAP. XXXVI.

### *Of the bones of the Leg, or Shank.*

THoſe which would deſcribe the muſcles of the legge, ought firſt to deſcribe the bones thereof,beginning at the *Rotula*, or whirle bone of the knee.

What the *Patella*,or whirle bone of the knee is.

This bone is griſtly on the outſide,and round in compaſſe, but on the inner and middle part after ſome ſort gibbous,but ſomewhat flatted at the ſides,that ſo it may be fitlier applied to the joint of the knee,and fitted within the anteriour cavity of the two appendices of the thigh,and the upper and foremoſt of the leg.

The uſe thereof is to ſtrengthen the joint of the knee, and to hold the leg at his due extent,ſo that it may not be bended ſo far forwards,ac it is backwards.

The uſe thereof

The bones of the leg are two,the one thicker, called by the particular and proper name, the *Os Tibiæ* or leg bone;the other which is leſſer,is termed *Perone*, or *Fibula*,but commonly the leſſer *focile*,(and in Engliſh it may be termed the ſhin-bone.) The thicker being hollow and marrowie, is ſeated in the inner part of the leg,having two proceſſes, the one bigger, the other leſſe.

What, and how many bones the leg hath.

The leg-bones.

The bigger ſeated on the upper part of the bone,and conjoined to it by *Symphyſis*,makes two ſuperficiall and ſide cavities disjoined by an indifferent riſing;wherefore this bone is connext to the bone of the thigh by *Ginglymos*. For in the cavities thereof it receives the lower and hinder protuberances of the Appendix of the thigh bone, but the middle eminencie thereof, is received by it between the two protuberances thereof.

This joint is ſtrengthned,not only by the force of the tendons, or muſcles ending there, but alſo of three ſtrong ligaments, of which one proceeds from all the externall, another from all the internal parts of thar connexion;the third which we,out of *Hippocrates*,called *Diaphyſis*,from the diſtance or ſpace between thom. The other proceſſe of the leg bone, which we called the leſſe, ſeated in the lower part thereof,makes as it were a double cavity, whereby it receives the *Aſtragalus* or paſtern bone;but on the inſide it makes the ankle, as the *Perone* makes it without: between theſe ankles the *Aſtragalus* is received on the ſides,and turned as the nut in a Croſſe-bow,as often as there is need to bend or extend the Foot. Beſides, this ſame leg-bone, being triangular,hath three eminencies made in the ſhape of an Aſſes back;the ſharper deſcends alongſt the fore part, called by the Greeks *Antionemion*; the ſecond reſides on the inner part,and the third on the outer;all theſe muſt be diligently obſerved, and chiefly, that on the forepart;becauſe it is as a guide and rule to a Chirurgeon in the well ſetting of a broken leg. The *Perone*, or ſhin bone, is ſeated, as it were, on the outſide, and as behind the leg-bone; it hath alſo two appendices hollow on the inſide, but gibbous on the out. This bone by the upper of theſe is faſtned and inſerted under the inner,and in ſome ſort the hinder appendix of the leg bone,ſo that it is in no ſort articulated with the thigh,but ſerves only in ſtead of a leaning ſtock. But by the lower, this ſame bone is not only received in the loweſt part of the leg,or ankle, or paſtern bone, but

What *Diaphyſis* is.

The *Perone fibula*, or ſhin bone.

alſo receives part thereof, which is joined on the ſame ſide with the heel, eſpecially then when we bend our foot outwards.

This bone is faſtned to the forementioned bones by *Synarthroſis*, but bound by ſtrong ligaments proceeding from the ſame bones, and mutually ſent from one to another, or if you had rather, from the upper into the lower, as we ſaid in the arm. But this ſame *fibula* or ſhin bone is alſo triangular, having three lines, of which one ſtands outwards, another on the foreſide, and the third behind.

## CHAP. XXXVII.

### *Of the Muſcles of the Legs.*

Their number. ALL the motions of the leg, are performed by eleven muſcles, of which there be ſix on the foreſide, and five on the hind. But of theſe, ſome move the leg only, as thoſe which take their originall from the bone of the thigh; others truly move the leg, but with the thigh, as thoſe which ariſe above the thigh, that is, from the hanch, huckle, and ſhare bones.

The *Longus*. The firſt of theſe on the foreſide called the Long, but commonly the *Sutorius* (or Tailor muſcle, by reaſon of its action) it ariſes from the lower and fore extremity of the ſpine or appendix of the hanch bone, and deſcending obliquely above the other muſcles, is inſerted by a large and membranous tendon, in the fore and inner part of the leg under the knee; the action thereof is to croſſe the legs, but being firſt bended by the muſcles preſently to be treated of, it helps alſo the three headed muſcle in the performance of the formentioned action.

The *Membranoſus*. The ſecond of theſe four muſcles is termed the *membranoſus*, or membranous, becauſe it is wholly ſuch, unleſſe at the originall where it deſcends fleſhy from the root and baſis of the above mentioned ſpine of the hanch bone, and that obliquely with its membranous and broad tendon (mixed with the common coat of the muſcles) into the outward part of the leg, which it moves outwards, as alſo the thigh with the four twin muſcles; for as we have in another place obſerved, of two oblique motions concurring in one, is made a right motion; and beſides, almoſt all the motions of the body, are thus performed; the muſcles which perform ſuch motions are placed and oppoſed in an oblique ſite, as may be perceived by the motions and ſite of the muſcles of the hand taken in generall.

The *Rectus*. The third, called the *Rectus*, or right (becauſe it deſcends above the *Crureus*, alongſt the right fore line of the thigh, between the two vaſt muſcles) comes forth between the extremity of the appendix of the hanch bone and cavity thereof, with a very ſtrong ligament, and then is inſerted into the forepart of the leg, paſſing over the midſt of the whirle-bone of the knee; it extends the leg, with the three following, but by accident it may help the bending of the thigh.

The two *Vaſti*. The fourth and fifth are called *Vaſti*, vaſt or huge muſcles, by reaſon of their largeneſſe, the one of theſe is internall, the other externall: they both ariſe with right fibers, from their originall, but with oblique at their inſertion, by reaſon whereof they both ſeem to have a compound action from a right and oblique motion; the right helping for the extenſion of the leg, but the oblique to draw one knee to another, or to disjoin both the knees; the internall comes by its right fibers from the root of the little *Trochanter*, but by its oblique from the inner deſcendent line of the thigh. The externall paſſes forth by its right fibers from the root of the great *Trochanter*, but by the oblique from the externall deſcendent line of the ſame bone. But all theſe fibers are in certain places ſo mixed with the *Crureus* that they cannot be ſeparated unleſſe you violate the one of them; they go into the leg (each on his ſide) above the whirlbone of the knee alongſt the ſides of the right muſcle, with which it makes an unſeparable tendon, as you ſhall preſently hear.

The *Crureus*. The ſixt and laſt of theſe fore muſcles called the *Crureus*, or thigh muſcle (by reaſon of the ſtrait and firm adheſion, which it hath with the thigh bone, which is by ſome called *Crus*) from the ſpace between the two *Trochanters* deſcends under the right muſcle and two vaſt muſcles into the forepart of the thigh, even to the whirlbone of the knee. But we muſt note that theſe four laſt muſcles make a common thick and broad tendon, with which they cover the *Patella*, or whirl bone, and all the fore dearticulation of the knee, that they cannot be ſeparated without tearing; wherefore we muſt think that this tendon ſerves the knee for a ligament; now all theſe muſcles performing their action together, extend the leg. The five hind muſcles follow to be ſpoken of; of which three ariſe from the tuberoſitie of the huckle bone, going into the inner part; the fourth from the middle of the *Pubis*, called *Biceps*, that is, the two-headed muſcle into the outſide of the leg.

The three Internall. Of the internall, one paſſing from the forementioned tuberoſity, deſcends ligamentous even into the midſt of the thigh, and then becoming fleſhy, is inſerted by its tendon, after the manner we formerly mentioned.

The other being ſlender, paſſing forth alſo from the ſame place, with its tendon, is inſerted with the tendon of the long muſcle, and ends in the inner part of the leg, which with its companion, it draws inwardly, and brings to the other, which ſame thing it performs in the thigh, by the help of the three-headed muſcle.

The

The third being the inner, or hinder, descends from the middle part of the share-bone, with a broad and slender ligament, and is inserted with a round tendon, into the inner part of the leg after the manner of the forementioned.

The fourth called *Biceps* takes one of the two heads, of which it consists, from the last mentioned tuberositie, the other from the outer line of the thigh, but is inserted into the externall part of the leg, as we formerly said. The *Biceps*, or two-headed muscle.

The fifth and last called the *Popliteus* descends obliquely fleshy from the externall condyle or knot of the thigh, into the inner and hinder part of the leg, at the joining thereof to the shin-bone; the action thereof is, to draw the leg, after a manner inwards. The *Popliteus* or ham muscle.

## CHAP. XXXVIII.

### *Of the Bones of the Foot.*

THE Order of Anatomy requires, that we now prosecute the muscles moving the foot; but because we should in vain deliver their insertion, the disposition and condition of the bones of the foot, not being first known, wherefore it first behoves us, to set forth their description. Therefore the bones of the foot are six and twenty in number, distinguished into three ranks; that is, the bones of the *Tarsus* or Instep, are seven; those of the *Pedium*, the afterwrist, or Back of the foot, five; and those of the toes, fourteen. Of the seven bones of the instep, there are 4 named, and 3 unnamed. The first of the named immediately following the bones of the leg, is called *Astragalus*, the pastern or ankle-bone. This hath three connexions, one, as we said before, in the upper and broader part, with the bones of the leg, of which it is received; the other in the lower and hind part, by which it receives the upper and inner processe of the bone of the heel; the third on the foreside by which it is received in the cavity of the *Os Naviculare* or *Scaphoides*, that is, the boat-like bone. By the first connexion the foot is extended and bended; by the second it is moved with the heel to the sides: the two first connexions are by *Diarthrosis*, the last by *Synarthrosis*. But it is strengthned by strong and broad ligaments, descending and ascending from one bone into another; also they are strengthned by membranes, muscles and tendons, descending to the foot, above and under these joints. But this bone hath three processes, as three feet fastened to the bone of the heel; of which the first and least is under the outer ankle; the bigger (which *Galen* saith, makes a round head, fastned on a long neck) looks towards the forepart of the foot, over against the great toe, and the next toe to it; the middlemost is at the heel, behind the leg-bone. Their number. The bones of the Instep. The *Astragalus* its three connexions and their use. Its three processes.

I passe over in silence many other things; as the smoothness and asperity or roughness of the bone, which I had rather you should learn by ocular inspection, than by book. The second bone lying under this is called the *Calcaneum*, or heel-bone, being the biggest of all the bones of the foot, upon which all the body relies when we go. It hath two upper processes, the one great, the other little. The great is received in the hind and outer processe of the *Astragalus*; the lesser is received on the inside in the third processe of the same bone, which we said had a round head fastned to a long neck. Besides, it is round on the hind part, and much disjoined from the leg-bone, but on the fore and longer part, it is knit by *Synarthrosis* to the Die-bone, whose lower and inner part, it seems to receive; the superficies thereof is wholly unequall, and rising up with many swellings. On the inner side it makes as it were a channell, so to give way, as well to the vessels as tendons going to the sole of the foot and toes. Lastly, we must consider the holes by which the vessels passe into that bone to give it nourishment; by reason of which vessels the fracture of this heelbone, is very dangerous, because of the pressing and contusion of the vessels; as *Hippocrates* shews. For the ligaments of this heel, or heel-bone, they are such, as these of the *Astragalus*, to wit, tendons, membranes and ligaments properly so called, coming from one bone to another. The third bone of the foot is named *Scaphoides* or boat-like, from the resemblance it hath to a boat, for on that part which looks towards the pastern bone, it is hollow; but on that part which is next the three *Innominata*, or nameless bones (which it sustains, and of which it is received, as it in the cavity thereof receives the head of the *Astragalus*) it is gibbous like the bottome of a boat. The connexions thereof are by *Synarthrosis*, and they are strengthned by the forementioned ligaments; this same bone is arched on the upper part, but somewhat hollowed or flatted below; the inner part ends in a point, like the prow of a ship, but the outer obtuse like the stern of a ship. The fourth bone of these which have names, is called the *Cuboides*, from the resemblance of a Die; although that similitude be very obscure. On the forepart it sustains the toes, which by a certain proportion to the fingers of the hand, may be called the ring and little toes; but it is sustained on the hind part, with the back part of the heel; on the inner side it is joined with the boat-like bone, and that nameless bone which sustains the middle toe; on the outside, it produces a rising like the back of an Asse, which on the lower part is extended transversely all the length thereof; at the two sides of this eminency or rising, there are two smal cavities, in form of a channel. The descriptiō on of the *Calcaneum* or *Calx*. Why a fracture of the heel is so dangerous. *Hippocrates*, *Sect. 3. lib. de fracturis*. The *Os Scaphoides*, or boat-like bone. The *Os Cuboides* or Die-bone.

*The Figure of the bones of the Foot properly ſo called.*
*Figure 1, and 2. ſhew the bones of the right foot faſtned together their upper face and their neather face.*
*Fig. 3, 4, 5, and 6. ſhew the upper, lower, inner and outer ſides of the Talus or paſtern.*
*Fig. 7, 8, 9. ſheweth the ſame ſides of the Heel.*
*Fig. 10, and 11. ſheweth the forward and backward ſide of the boat-bone.*
*Fig. 12, 13. ſhew the fore and back part of the wriſt made of four bones.*

ABCD 3,5,6. The protuberation of the *Talus* joined to the appendix of the leg-bone, and of this protuberation four ſides.
EE 3. A *ſinus* inſculped in the protuberation of the *Talus*.
FF 3, two bunching parts of the *Talus*.
G 3, the inner ſide of the protuberation of the *Talus* cruſted over with a griſtle, joined to the inner ankle.
H 6, the outward *ſinus* of the potuberation of the *Talus* covered over with a griſtle, and receiving the inner ankle.
I 5. A rough *ſinus* of the *Talus*, receiving a griſtly ligament from the inner ankle.
K 6, a *ſinus* of the *Talus* receiving a griſtly ligament from the outward ankle.
L M 5, 6, two *ſinus* in the hinder part of the *Talus*.
N 3, 4, 5, 6. the neck of the *Talus* or paſtern bone.
O 3, 4, 5, 6. the head of the *Talus* going under the *ſinus* of the boat-bone.
P 7, 8, 9, the head of the heel cruſted over with a griſtle, and going under the *ſinus* of the *Talus* or the paſtern bone.
Q 4. a large *ſinus* of the *Talus* receiving the head of the heel. R 7, 8, 9. a *ſinus* of the heel wherto the lower part of the head of the *Talus* is joined. S 4. the lower power of the head of the *Talus* going into the *ſinus* of the heel. TT 4. a ſharp *ſinus* of the heel receiving a griſtly ligament from the paſtern bone. X Y Z 2. the place of the heel. YZ 2. Y 8. Z 9. a proceſſe of the heel made for the production of muſcles. *a b* 7, 8, 9. from *a* to *b* the diſtance of the upper part of the heel. *c* 8, 9. the hinder part of the heel. *d* 2, 3. the inner ſide of the heel. *e* 8. the place where the tendons that run to the bottom of the foot are reflected. *f* 7, 8. the utter ſide of the heel. *g* 1, 7, 9. here the tendons of the 7 and 8 muſcles of the foot are ſtretched out. *h* 7. the forepart of the heel which is joined to the paſtern bone. *i* 7. that part of the heel which is joined to the Cube bone. *k* 11. the *ſinus* of the boat bone receiving the head of the *Talus*. *l m n* 10. three ſurfaces of the boat bone lightly prominent, which are articulated to the bones of the wriſt. *o p* 11. the upper part of the boat bone regarding the top of the foot. *q r* 10. and *q* 11. his lower part. *q* 10, 11. A *ſinus* through which the ſixt muſcle of the foot is led. *ſ t u* 13. the plain ſurfaces of the three inner bones of the wriſt whereby they are articulated to the boat bone. *x* 13. a ſhallow *ſinus* of the Cube bone whereby it is articulated to the heel. *αβ* 12. the place of the Cube bone to which that bone of the Afterwriſt is joined which ſupporteth the laſt toe ſave one. *γ* 12, 13. the place of the Cube bone where the third bone of the wriſt is articulated. *δ* 12, 13. that part of the Cube bone which reſpecteth the outſide of the foot. *ε* 12, 13. the ſurface of the Cube bone in the upper part of the foot. *ζ* 2, 13. that part of the Cube bone which regardeth the earth. *η* 2, a *ſinus* of the

Cube

Cubebone at which the tendon of the ſeventh muſcle of the foot is reflected. B 13. a proceſſe of the third bone of the wriſt whereinto the ſift muſcle of the foot is inſerted. ι 12. the place of the inner bone of the wriſt to which that bone of the Afterwriſt which ſuſtaineth the great toe is coupled. κ 12. the place of the ſecond bone of the wriſt whereto the bone of the Afterwriſt that ſupporteth the fore Toe is articulated. λ 12. the place of the third bone of the wriſt whereto that bone of the Afterwriſt which ſupporteth the middle Toe is articulated. μ 1, 2. a ſmall bone whereby that bone of the Afterwriſt which ſuſtaineth the little toe is joined unto the Cubebone. νν 1, 2 the diſtances betwixt the bones of the Afterwriſt. ξξ, 1, 2. the heads of the bones of the Afterwriſt, which enter into the boſomes of the toes. π 2, a proceſſe of the bone of the afterwriſt wherein the tendon of the ſeventh muſcle of the foot is implanted. ρ 2, a proceſſe of the bone of the Afterwriſt, which ſuſtaineth the little toe, which proceſſe receiveth the tendon of the eight muſcle of the foot. ς, τ, υ, 1, 2. the three bones of the foretoe. φ, χ, 2, two ſeed bones placed under that bone of the afterwriſt which ſuſtaineth the great toe. * 2 under *X*. a ſeed bone ſet to the ſecond joint of the great Toe. Γ, 1, 2. the *Talus* or paſtern. Δ, 1, 2. the Heel. Θ, 1, 2, the Boat-bone. Λ, Ξ, 1, 2. the bones of the toes. Φ, X, 1, 2. two bones of the great toe, I, II, III, IV, V, 1. the five bones of the afterwriſt.

The firſt and the greater of the *Oſſa innominata*, or nameles bones, ſuſtains the great toe; the leſſer and ſecond, the next toe thereto; the third and middle in bigneſſe, the middle toe. Theſe three bones are arched on their upper-part, but ſomewhat hollowed below. They are knit to the three forementioned bones by *Synarthroſis*, of which they are received, but on the hind part with the boat-like bone which they receive. Now we muſt come to the bones of the ſecond rank, that is, of the *Pedium*, or back of the foot; theſe are five in number, bearing up the five bones of the toes. They are ſomewhat gibbous on the upper part, but hollow below; each of them hath two proceſſes at the end thereof, by the lower and firſt of which they receive the three nameleſs and Die-bone, but by the upper made into a round head, they are received of the firſt bones of the toes. Their connexions, whether with the toes, or bones of the inſtep, are by *Synarthroſis*. The ligaments as well proper as common are ſuch, as we ſaid of the former. The bones of the third order now remain to be ſpoken of which we ſaid, make the toes, and they are fourteen, two of the great toe, but three of each of the other toes. The firſt is ſomewhat longiſh, but the reſt are very ſhort, except that of the great toe, all of them on the upper ſide are round and convex, but on the lower ſomewhat hollow, and plain long-wiſe, that the tendons which bend them, may paſſe more ſtraitly and ſafely without inclining to either ſide, even to their furtheſt joints; although ſuch paſſages are much helped by the membranous & common ligament, which riſing from the ſides of theſe bones, involves theſe tendons, as we mentioned in the fingers. To conclude, each of theſe bones, the laſt excepted, have a double connexion by *Diarthroſis*, they are all unequall in their bigneſſe, that is, thick at their beginning (where they receive the heads of the precedent bones, upon which they move as a dore upon the hinges) and ſo they grow ſmaller towards the ends, but by their ends, they are received of the following bones: at their ends they riſe into two eminencies on their ſides, diſtinguiſhed by a cavity between them, through which occaſion they are far thicker at their ends, than in their middle. The Ligaments by which their connexions are faſtned, are ſuch as the former. The *Oſſa ſeſamoidea* or ſeed bones of the feet are like in number and ſite to theſe of the hands. But this is to be noted, that thoſe ſeed-bones which are in the firſt articulation are ſomewhat bigger than the reſt, and they are round and longiſh on the outſide, but ſmooth and hollow on the inſide, ſeated between two cavities, encompaſſed by three riſings, of which two are on the ſides, and the third in the midſt of the extremity of the firſt bone of the *Pedium*, which chiefly bears up the great toe. To conclude, before we come to ſpeak of the muſcles, we muſt obſerve that the foot was made for two commodities. The firſt is to ſtay and bear the whole body, when we ſtand, for which cauſe nature ſet not the great toe contrary to the other, as it placed the thumb on the hand. The other is for apprehenſion, or taking hold of, wherefore nature framed and made the foot, and theſe moveable and jointed in the toes, as in the fingers of the hand. Beſides alſo for that we muſt goe upon our feet, Nature hath made them in ſome places hollow on the lower ſide, and in otherſom plain in a triangular figure, that ſo our feet may carry us over every ſoil, plain, mountainous, equal and unequal, through all parts of the world.

*The Oſſa innominata or nameleſs bones.*

*The bones of the foot or Pedium.*

*The bones of the toes.*

*The ſeed bones of the foot.*

*The twofold uſe of the feet.*

## CHAP. XXXIX.

### *Of the Muſcles moving the foot.*

THe muſcles of the Leg moving the foot are abſolutely nine, three in the forepart and ſix in the hind. Two of the three fore muſcles bend the foot, when they jointly perform their action, but when ſeverally, each draws it to his ſide; the third chiefly extends the Toes, for other whiles it ſeems by its ſlenderer and longer tendon (which exceeds not that bone of the *Pedium* which ſuſtains the little toe) to help alſo to bend the foot.

*Their number.*

*Muſculus Peronæus.*

The firſt is called *Peronæus*, becauſe it deſcends alongſt the bone *Perone*; the other the *Tibiæus anticus*, for that it deſcends along the *Os Tibiæ*, or bone of the leg. The third from its action is called the *Digitumtenſor*, or Toe-ſtretcher. For their originall the *Peronæus* which ſeems to have two heads, deſcends from the upper appendix of the *Perone* or ſhin-bone by its firſt head, but by the other from the middle of the ſame bone from the fore ſide into the hind, as the ſuperficies ſhews which paſſes between the fore and outward line of the ſaid bone; but after it arrives at the lower and hinder appendix of the ſame bone, behind the outer ankle it produces two tendons, which by the guidance of the Ligaments as well proper, as common, goe, the thicker under the ſole of the foot, ending in the Die-bone and that bone of the *Pedium* which ſuſtains the great toe; the leſſer goes on the outſide to the Die-bone, and the laſt and leaſt bone of the *Pedium* which bears up the little toe, ſometimes a ſlender portion thereof is produced even to the ſide of the little Toe, extending it and drawing it from the reſt. The *Tibiæus anticus* or fore leg muſcle proceeding from the upper and outer appendix of the Leg-bone deſcends above the ſurface of the ſame bone, which is between the fore and outer line to which it adheres, as alſo to that ſurface even to the midſt, from which place it produces one tendon, which deſcending on the fore and loweſt part, ends on the outſide into two of the nameleſs bones, that is, into the firſt which is the thicker, and into the middlemoſt, but beſides by a ſlender portion thereof it is extended into the firſt and greater bone of the *Pedium*, ſo to extend the great toe, drawing it inwards to the other foot. And this muſcle with the precedent bends the foot, if they both perform their parts at once; but if ſeverally, each draws the foot towards his ſide. The third which is the *Digitumtenſor*, or Toe-ſtretcher, is twofold; the one takes its originall from the top of the leg, and running alongſt the ſhin-bone, and paſſing under the ring, carries it ſelf into the foot, in which it ends by five tendons going to all the joints of the Toes, and by a ſixth at that bone of the *Pedium* which ſuſtains the little toe, whereby (as we formerly ſaid) it helps the bending of the foot. The other deſcends into the midſt of the ſhin-bone, and ſomewhat faſtned thereto, by one tendon paſſing under the ring it goes to the great Toe. But you muſt note that all theſe Tendons have nervous, ligamentous and fleſhy fibers ſo ſeparated from each other, that they can equally alone perform their function, as if they were more diſtinct muſcles. And we muſt think the ſame of the reſt which have diſtinct tendons preſently from their fleſhy part.

*Tibiæus anticus.*

The Toe-ſtretcher is twofold.

The 6 hind muſcles.

The ſix hind muſcles follow, of which the two firſt are called the *Gemelli* or twins by reaſon of the ſimilitude of their thickneſſe, originall, inſertion and action. The third is called the *Plantaris*, becauſe it is ſpent upon the ſole of the foot, as the *Palmaris* upon the palm of the hand. The fourth is termed the *Soleus* or ſole muſcle by reaſon of the reſemblance it hath to the fiſh of that name. The fift the *Tibiæus poſticus* or hind leg muſcle which deſcends alongſt the back part of the leg-bone. The ſixth and laſt the *Digitumflexor* or Toe-bender, equivalent to the deep muſcle of the hand; ſome make but one muſcle of this and the *Tibiæus poſticus*, which produces three tendons; others had rather make three, as thus, that one ſhould be the *Tibiæus*, the other the bender of four Toes, the third the bender of the great Toe.

The two *Gemelli* or twin muſcles.

Now for the two *Gemelli* or twins, the one is internall, the other externall; the internall paſſes forth from the root of the inner Condyle of the thigh; but the externall from the externa l Condyle; and from this their original preſently becoming fleſhy, eſpecially on the outſide, they meet together a little after in their fleſhy parts, and with the *ſoleus* they make the thick and great tendon at the midſt of the leg, which from thence is inſerted into the back part of the heel; in this very tendon breed painfull kibes. The action thereof is, to help our going by putting forth the foot, whilſt it draws the heel towards its originall.

In what place the kibes breed

The *Plantaris*.

The *Plantaris* the leaſt and ſlendereſt of them all, paſſes forth fleſhy from the outward head of the leg-bone, and from thence the ſpace of ſome four fingers bredth it ends in a ſtrong and ſlender tendon, which it ſends between the twin and ſole muſcles to the ſole of the foot, there to produce a membrane which covers the ſole of the foot, and a muſcle equivalent to the upper bender of the Hand.

The *Soleus*.

The *Soleus*, or ſole muſcle, the thickeſt of them all, and ſeated under the twin muſcles, deſcends from the commiſſure of the leg and ſhin-bones, and about the midſt of the leg, after it hath mixed his tendon with that of the twin muſcles, it runs into the foreſaid place that it may extend the foot for the foreſaid uſe.

The *Tibiæus poſticus*.

The *Tibiæus poſticus* deſcends from the hinder appendix of the leg and ſhin-bones, and adhering to them almoſt as far as they goe, by a ſtrong tendon, being as it were bony at the end thereof, it is inſerted into the Boat-like bone, and the two firſt nameleſs bones, ſo to help the oblique extenſion of the foot.

The *Digitumflexor* twofold.

The laſt being the *Digitumflexor* or Toe-bender is twofold, for one ariſes from the leg-bone, in that place where the *Poplitæus* ends, and inſerted into that ſame bone it goes even to the backſide of the inner ankle & from thence into the joints of four of the toes. The other draws his original from almoſt the middle of the ſhin-bone, and ſomewhat inſerted into it, it goes by the heel and paſtern bone to the great toe, mixed with the precedent; their action is to bend the firſt joint of the Toes, rather by the force of the common ligament, than by the ſmall portion of the tendon which ends there. Bnt it is their action to bend the laſt dear ticulation of the Toes by their proper inſertion.

## CHAP. XL.

*Of the muſcles moving the Toes of the feet.*

NOw follow the muſcles moving the Toes; theſe are eight in number, one on the upper, and ſeven on the lower ſide. The firſt proceeds from the Paſtern, heel and Die bones below the external ankle, or the ligament of theſe bones with the leg-bone, and obliquely ſtretched to the top of the foot is parted into five ſmall tendons to the ſides of the five toes, ſo to draw them outwards towards its originall, whereupon it is called the *Abductor* of the Toes, and alſo *Pedioſus*, becauſe it is ſtretched over the *Pedium* or back of the foot.

Their number.

The *Abductor* of the toes, or *Pedioſus*.

The firſt of the ſeven of the lower ſide called the *flexor ſuperior* or upper bender, ariſes from the heel and ſtretched alongſt the foot under the ſtrong membrane, (which from the heel is ſtraitly faſtned to the extremity of the bones of the *Pedium* to ſtrengthen the parts contained under it) is inſerted by four tendons, at the ſecond joints of the four toes which it bends. Here you muſt note, that neer the inſertion thereof, this muſcle divides it ſelf, like that muſcle of the hand which is called *ſublimis*, that ſo it may give way to the deep, which (as we ſaid) deſcends alongſt the fingers, to which a certain common membranous ligament adjoins it ſelfe, which involves and faſtens it to the bone all alongſt the lower part of the fingers, even to the laſt dearticulation.

The *Flexor ſuperior*.

The ſecond equivalent to that muſcle of the hand which is called *Thenar*, ſeated on the inner ſide of the foot, ariſes from the inner and hollow part of the heel and paſtern bones, and ends in the ſide, and inner part of the great toe, which it draws from the reſt, inwards. This may be divided into two or three muſcles, as the *Thenar* of the hand, to draw the great toe to the reſt, as much as need requires, juſt as we ſaid of the Hand. The third anſwerable to that of the hand which is named the *Hypothenar*, paſſes from the outer part of the heel, and aſcending by the ſides of the foot it is in like manner inſerted into the ſide of the little Toe, ſo to draw it from the reſt; to which ſame action a certain fleſh contained under the ſole of the feet may ſerve, which is ſtretched even to theſe Toes, that alſo it may ſerve to hollow the foot.

The muſcle equivalent to the *Thenar*.

The four *Lumbrici* or wormy muſcles follow next, which from the membrane of the deep Toe-bender are inſerted into the inner and ſide part of the four toes, ſo to draw them inwards, by a motion contrary to that which is performed by the *Pedioſus*.

The 4 *Lumbrici*.

The *Interoſſes* or bone-bound muſcles of the *Pedium* or back of the foot, remain to be ſpoken of: Theſe are eight in number, four above, and as many below, different in their originall, inſertion and action; for the upper, becauſe they draw the foot outwards with the *pedioſus*, ariſe from the fore and inner part of that bone of the *Pedium*, which bears up the little Toe (and ſo alſo the reſt each in its order) and are inſerted into the outward and fore part of the following bone. The lower on the contrary paſſe from the fore and outer part of that bone of the *Pedium*, which bears up the Great Toe (and ſo each of the reſt in its order,) but are inſerted into the inner and upper part of the following bone, ſo with the wormy muſcles to draw it inwards, or to hollow the foot as the outwards, or to flat the foot, as we ſaid of the *Interoſſes* of the hand.

The deſcription of the upper and lower *Interoſſes*.

## CHAP. XLI.

*An Epitome or brief recitall of the bones in a mans body.*

THe whole head which hath the leaſt conſiſts of 60 bones; but that which hath moſt of 63. that is, 14 of the *Cranium* or skull, 14 or 17 of the face, and 32 teeth; Of the bones of the ſcul there be 8 containing, and 6 contained; the containing are, the *Os frontis*, or Forehead bone, the Nowle-bone, the two bones of the *Sinciput*, the two ſtony bones, the Wedgbone, and the Sive-like or ſpongy bone. But the contained are ſix ſhut up in the cavity of the Ears, the Anvil, Hammer and Sitrrop.

The bones of the Scull 14.

For the bones of the face, there are ſix within or about the orb of the Eye, that is, on each ſide three; two bones of the Noſe, two leſſer Jaw bones, and two bigger, which are alwaies in beaſts ſeen diſtinguiſhed by a manifeſt difference, but it is ſo rare in men, that I have not found it as yet; therefore theſe only are diſtinguiſhed by manifeſt difference, two which contain all the upper teeth, the two inner of the palate, the two of the lower Jaw in children; And laſt of all the *Os Criſtæ*, whence the middle griſtle or partition of the Noſe ariſe.

The bones of the face 15.

The two and thirty teeth are equally diſtributed in the upper and lower Jaws; and of theſe there be eight ſhearers, four fangs, or Dog teeth, and twenty Grinders.

The teeth 32.

And

The bone *Hyoides*.

And there is another bone at the root of the tongue called *Os Hyoides*, alwaies compoſed of three bones, ſometimes of four.

The bones of the ſpine 34. 2 Collar-bones.

Now follow the bones of the Spine, or Back-bone, which are juſt four and thirty, that is, ſeven of the neck, twelve of the cheſt, five of the loins, ſix of the holy-bone; and four of the rump. Beſides there are two bones of the throat, or Collar bones.

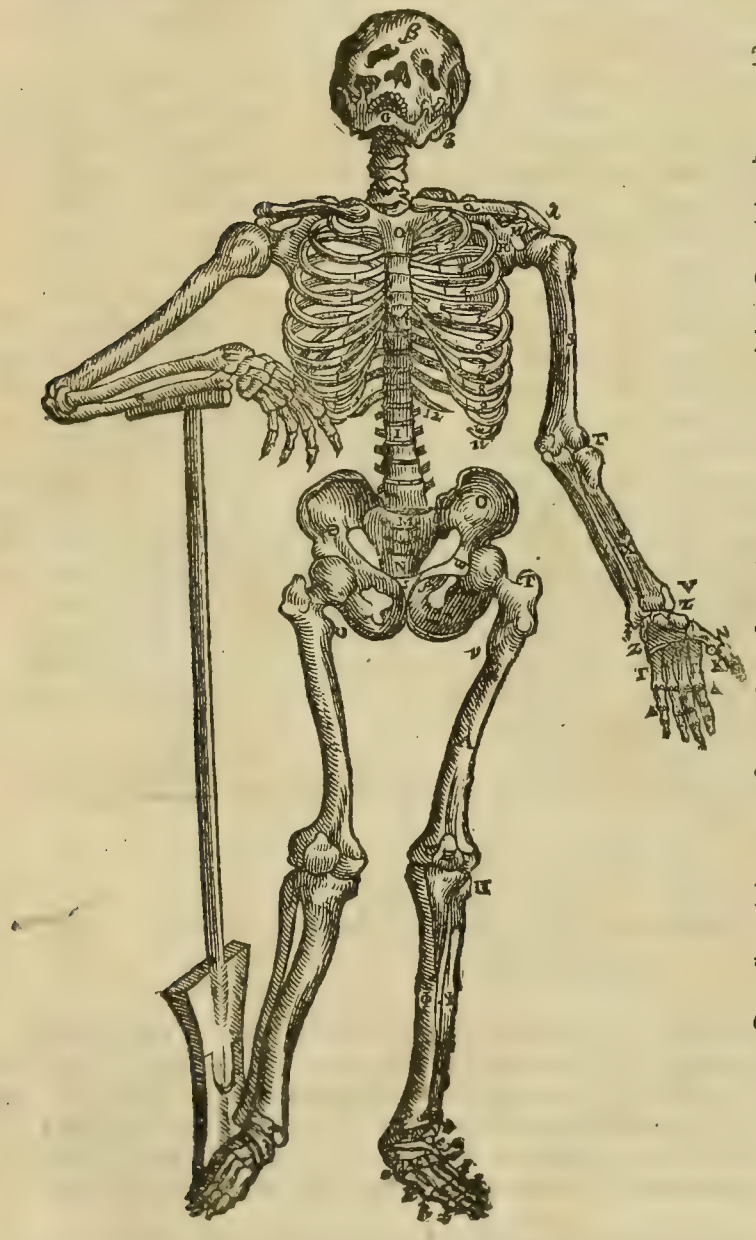
The ribs 24. The bones of the *Sternon* 3.

The ribs are twenty four, that is, fourteen true and ten baſtard ribs. The bones of the *Sternon* or Breaſt-bone moſt frequently three, otherwhiles ſeven, as ſometimes in young bodies.

The bones of the whole arm 62.

Hence coming to the Arms there are reckoned 62, beginning with the ſhoulder-blade; as there are two ſhoulder-blades, two Arm bones; four bones of the cubit; that is, two Ell bones and two Wands; ſixteen of the Wriſt, eight of the Afterwriſt, and thirty of the fingers; into this number alſo come the *Seſamoidea* or ſeed bones, of which ſome are internall, and theſe alwaies twelve at the leaſt, although ſometimes there may be more found, a great part of which rather merit the name of griſtles, than bones; there are others externall if we beleeve *Sylvius*.

*The firſt ſheweth the forepart of the Sceleton of a man, &c.*



*The Declaration of theſe three figures put into one.*

A 3. The Coronall Suture called in Greek στεφανιαία.

B 2 3. The ſuture like the letter λ, called λαμβδοειδὴς.

C 2. The ſagittall ſuture called ὀβελιαία.

D 2 3. The ſcale-like *Conjunction* called λεπιδοειδὴς.

α 2 3. *Os verticis*, or *Syncipitis*, the bone of the *Synciput*, called *Os* βρέγματος.

1 3. The forehead bone, that is, μετώπη.

γ 2 3. The bone of the nowl or *inion*.

δ 2 3. The bones of the temples or κροταφῶν.

ε 3. An appendix in the temple bone like a Bodkin, ξυλοειδὴς.

ζ 1 2 3. A proceſſe in the temple bone like the teat of a dug, called therefore *Mamillaris* and μαστοειδὴς.

E 2 3. The wedge bone, σφηνοειδὴς.

η 3. The ſtony part of the ſcul.

θ 3. A proceſſe of the wedg bone much like the wing of a Bat, and therefore called πτερυγοειδὴς.

The bones of the whole leg 66.

Now remain the bones of the leg, which (if we reckon the *Oſſa Ilium* on each ſide three, as in young bodies, it is fit they ſhould) they are ſixty ſix, beſides the ſeed-bones, that is to ſay, two Haunch bones, two ſhare bones, two Huckle bones, two thigh bones, two Whirlbones of the knees, four of the leg, that is, two leg bones, and two ſhin bones. Fourteen of the Inſtep, as two heel, two paſtern, two boat-like, two Die, and ſix nameleſſe bones. Ten of the *Pedium* or back of the foot, that is, five in each foot; and twenty eight of the Toes: and as many ſeed bones in the feet, as the hands enjoy. But I have thought good to add theſe figures for the better underſtanding of what hath been ſpoken hereof.

*The 2 and 3 Figure sheweth the back side of the Sceleton, and the lateral all part of the Sceleton.*

F 1, 2, 3. the yoak bone ζυγωμα. G 1, 3. the lower jaw. I, K, L, M, N. 1, 2, 3. the back or the spine, ραχις. From I to K, the neck, τραχηλος. From K to L, the Rack bones of the Chest. From L to M, the rack bones of the Loins. From M to N, the holy bone ἱερὸν. N, the rump bone, κόκκυξ. O, 1, 3. the breast bone στέρνον. P 1, 3. the sword-like gristle of the breast, ξιφοειδὴς. Char. 1, 3. as far as to 12. in all three Tables, shew the twelve ribs of the Chest, πλευραὶ. Q 1. the clavicles or collar bones, κλεῖδες. R, 1, 2, 3. the shoulder-blade, ὠμοπλάτης. λ, 1, 2, 3. The upper processe of the shoulder blade, or the top of the shoulder, called ἀκρώμιον. μ, 1, 3. the lower processe of the shoulder blade, called ἀγκωνοειδὴς. S 1, 2. the bone of the arm, called *Humerus* and βραχίων. T V 1, 2, 3. the cubit πῆχυς. X 1, 2, 3. the wand or the upper bone of the Cubit, called κερκὶς. Y 1, 2, 3. the ell or lower bone of the Cubit, called πῆχυς. ν 3. the processe of the cubit, ὠλέκρανον. ξ 13. the processe like a bodkin or probe, called στυλοειδὴς. ZZ. 1, 2, 3. the wrist καρπὸς. Γ 1, 3. the Afterwrist μετακάρπιον. ΔΔ. 1. the fingers δάκτυλοι. Θ 1, 2, 3. the bones joined to the sides of the holy bone, on each side distinguished as it were into three parts. ο 1, 2, 3. the first part called the Hanch bone *Os Ilium*, λαγόνων. π 1, 2, 3. the second part the bone of the *Coxendix* ἰσχίον. ρ 1, 2, 3. the third part the share bone, *Os pubis*, ἤβης. σ 1, 2, 3. a gristle going between the conjunction of the share bones. Λ 1, 2, 3. the thigh, μηρὸς, τ 1, 2, 3. the greater outward processe of the thigh called *Rotator* προσκαντὴρ μέγας. υ 1, 2, 3. his lesser and inner processe. Ξ 1, 2, 3. the whirlbone of the knee, *Patella Rotutula*, ἐπιμύλις. Π Σ 1, 2, 3. the leg, κνήμη. Φ 1, 2, 3. the inner and greater bone of the leg, σφυρὸν. Ψ, 1, 2, 3. the utter and smaller bone of the leg, called the Brace bone, *Fibula*, περόνη. φ 1, 2, 3. the processe of the leg or the inner ankle called *Malleolus internus*. X, 1, 2. the processe of the brace of the outward ankle, both of them are called in Greek σφυρὸν. Ω 1, 2, 3. the bone called the cockall,

*Talus*,

*Talus*, *ba liſta*, *Os* α'στραγαλος. *a*, 2, the Heel *Calx*, πτερνα. *b* 1, 3. the bone called *Os Naviculare*, σκαφοειδες. *cc*, 1, 2, 3. the wriſt of the foot called *Tarſus*, conſiſting of four bones, ταρσος. *d*, *e*, *f*. 1, 2, 3. three inner bones of the wriſt of the foot, called by ſome κυνοειδες. *g* 1, 2, 3. the utter bone of the wriſt of the foot like a Die, κυβοειδες. *hh* 1, 2, 3. the Afterwriſt of the foot called *Pedium*, by ſome μεταταρσος. *ii*, 1, 2, 3. the toes of the foot. *k* 1, 2, 3. the ſeed bones of the foot, called *oſſicula ſeſamina* σησαμοειδη.

*This figure ſheweth the Sceleton of the bones and griſtles of a woman, that it may appear all her bones are in proportion leſſer than the bones of a man. But in this figure only thoſe parts are marked with letters wherein a woman differeth from a man in her bones and griſtles.*

A, The ſagittall ſuture deſcending into the noſe, and dividing the fore-head bone, which is ſometimes found in women, very rarely in men, but alwaies in infants.

BB, The Cheſt ſomewhat depreſſed before, becauſe of the Paps.

CC, the collar bones not ſo much crooked as in men, nor intorted ſo much upward.

D, the breſt bone perforated ſometimes with a hole much like the form of a heart, through which veins do run outward, from the mammary veins unto the paps.

E, the griſtles of the ribs, which in women are ſomewhat bony, becauſe of the weight of the Dugs.

F, a part of the back reflected, or bent backward above the loins.

GG, the compaſs of the hanch bones running more outward, for the womb to reſt upon, when a woman is with child.

HH, the lower proceſſes of the ſhare bones, bearing outward, that the cavity marked with K, might be the larger.

I, the anterior commiſſure or conjunction of the ſhare-bones filled up with a thick griſtle, that in the birth they might better yeeld ſomewhat for natures neceſſity.

K, a great and large cavity circumſcribed by the bones of the coxendix and the Holy-bone.

L, The rump or coccyx, curved backward to give way in the time of the birth.

M, the thigh bones by reaſon of the largeneſſe of the foreſaid cavity, have a greater diſtance betwixt them above, whence alſo it is that womens thighs are thicker than mens.

## CHAP. XLII.

*An Epitome of the names and kinds of compoſure of the bones.*

BEcauſe it is as neceſſary for a Chirurgeon to know the manner of ſetting and repairing broken bones, as to put them in their places when they are diſlocated, or out of joynt; but ſeeing neither of them can be underſtood when the naturall connexion of the bones is not knowne, I have thought it a worke worth my labour, briefly to ſet down, by what and how many means the bones are mutually knit and faſtned together. The univerſall compoſure and ſtructure of all the bones in a mans body is called by the Greeks *Sceletos*. But all theſe bones are compoſed after two ſorts, that is, by *Arthron*, an Articulation or joint, and by *Symphyſis* a naturall uniting or joining together.

What the *Sceletos* is.

The

There are many other kinds both of theſe ſorts. For there are two kinds of Articulation, that is, *Diarthroſis*, or Dearticulation, and *Synarthroſis*, or Coarticulation; which differ as thus, Dearticulation is a compoſition of the bones with a manifeſt and viſible motion; Coarticulation hath a motion of the bones, yet not ſo manifeſt, but more obſcure. But theſe two do again admit a ſubdiviſion into other kinds. For *Diarthroſis* contains under it *Enarthroſis*, *Arthrodia*, and *Ginglymos*. Now *Enrathroſis* or Inarticulation is a kind of Dearticulation, in which a deep Cavity receives a thick and long head, ſuch a compoſition hath the Thigh-bone with the Huckle-bone.

2 Sorts of Articulation.
What *Diarthroſis* anp *Synarthroſis* are.
3 Sorts of *Diarthroſis*.
What *Enarthroſis* is.

*Arthrodia* is when a lightly engraven cavity admits a ſmall and ſhort head; ſuch a connexion is that of the arm-bone with the ſhoulder-blade; of the firſt *vertebra* with the ſecond. The Greeks have diſtinguiſhed by proper names theſe two kinds of Cavities and heads; For they call the thick and long head *Cephale*, that is, a Head abſolutely; but the leſſer they term *Corone*, or *Coronon* which the Latines call *Capitulum*, a Little-head. But they call a deep Cavity *Cotyle*, and a ſuperficiary one *Glene*. The third ſort called *Ginglymos*, is when the bones mutually receive and are received one of another; as when there is a cavity in one bone, which receives the head of the oppoſite bone, and alſo the ſame bone hath a head which may be received in the Cavity of the oppoſite bone; ſuch a compoſure is in the Cubit knee, that is in the connexion of the Thigh-bone.

What *Arthrodia*.
What *Cephale* is.
What *Corone* is.
What *Cotyle* is.
What *Glene* is.
What *Ginglymos*.

And thus much of Dearticulation and the three kinds thereof. *Synarthroſis* or Coarticulation, another kind of juncture, hath alſo three kinds thereof (*Gal. lib. de Oſſibus*) to wit, *Sutura*, *Gomphoſis* and *Harmonia*.

3 kinds of *Synarthroſis*.

Suture is a compoſition of the bones after the manner of ſowing things together, example whereof appears in the bones of the Skull. *Gomphoſis* is when one bone is faſtened in another as a pin is faſtened in a hole, after which manner the teeth are faſtened in their ſockets in both the Jaws. *Harmony* is when the bones are compoſed by the interpoſition of a ſimple line, after which manner many bones of the noſe and face are joined together.

What a Suture is.
What *Gomphoſis* is.
What *Harmonia* is.

Hitherto we have ſpoken of the firſt conſtruction of the bones by articulation and the kinds thereof; now it follows we treat of *Symphyſis*.

*Symphyſis*, or growing together, as we formerly ſaid, is nothing elſe, than naturall union of the bones; ſuch union is made two manner of wayes, that is, either by interpoſition of no other thing; after which ſort in ſucceſs of time the bones of the lower Jaw grow together, which formerly in children were manifeſtly diſtinguiſhed; or by the mediation of ſome *Medium*; but that happens three manner of wayes, by interpoſition of three ſeverall *Media*, as firſt of a Griſtle, which kind of union the Greeks cal *Synchondroſis*, after which manner the Share-bones grow together and alſo ſome *Appendices* in young bodies; ſecondly, of a Ligament, and it is named by the Grecians *Syneuroſis*, the Name of a Nerve being taken in the largeſt ſenſe, for ſometimes it is uſed for a tendon, otherwhiles for a Ligament, otherwhiles for a Nerve properly ſo called and which is the author of ſenſe and motion. But this *Symphyſis* or union hath place by *Syneuroſis*, or interpoſition of a Nerve, in certain bones of the *Sternon* and Haunch.

What *Symphyſis* is.
*Synchondroſis*.
*Syneuroſis*.
The things ſignified by the word Nerve.

Thirdly, the bones grow into one by interpoſition of fleſh, called in Greek *Synſarcoſis*; thus the fleſh of the Gums faſten the teeth and makes them immoveable. But if ſome be leſs pleaſed with this diviſion, by reaſon of the obſcurities, in which it ſeems to be involved, this following expreſſion comes into my mind, which I was firſt admoniſhed of by *German Cortin* Doctor of Phyſick, which if you well obſerve it, is both blameleſs and more eaſie for your underſtanding.

*Synſarcoſis*.

*An Epitome or brief recitall of all the Muſcles of mans body.*

As I have formerly reckoned up the bones, ſo here, I have decreed to recite the muſcles of mans body. Wherefore in the face we firſt meet with the broad or skin muſcle ariſing from the fleſhy panuicle, and covering the whole neck and almoſt all the face. Then follow 4, pertaining to the upper eye-lids. In the Orbs of the eyes lye 14, that is 7, in each Orb, of which 4 are called right, two oblique, and one pyramidall. Then ſucceed 4 of the noſe, two externall on each ſide one, and two internall, theſe draw it together and the other open it. After theſe come the ten muſcles of the lower Jaw, of which two are called the *Crotaphitæ* or Temporall; two *Maſſeteres* or Grinders; two round (which ſeem to mee rather to pertain to the lips, than to this Jaw;) two little ones hid in the mouth, ariſing from the winged proceſs of the wedg-bone; two openers of the mouth being nervous or tendinous in their midſt. Then follow the 8 muſcles of the lips, that is, 4 of the upper, and as many of the lower, ſhutting and opening the mouth. The tongue with his ten muſcles is hid as it were in the den of the mouth. Wherefore the muſcles of the whole face are 51. In the fore part of neck are found the muſcles of the bone *Hyoides* and throttle; now 8 muſcles hold the bone *Hyoides* as equally ballanced; of which there are 2 upper ariſing from the Chin; 2 on the ſides from the proceſſe *Styloides*, perforated in their midſt, through which the 2 openers of the mouth in that part nervous do paſs; 2 ariſe from the *Sternon*, and laſtly 2 from the upper rib of the ſhoulder-blade to the *Coracoides*, which alſo in their midſt are nervous, in which place the two *Maſtoidei* lye upon them.

The

United mutually by *Symphyſis* or union; by which they are ſo conjoined that there is no diſſimilar, nor heterogenous body, at leaſt which may be diſcerned, interpoſed between them. Such union appears in the two bones of the lower Jaw at the Chin, in the bones of the *Sternon*, the Hanch with the Huckle-bones, and the Share-bones between themſelves; of this union there are no more kinds, for by this it cometh to paſs, that the bones which were more and diſtinct meet together by interpoſition of one *Medium*, to wit, a Griſtle, which now indeed is no Griſtle, but is turned into a Bone.

The bones, which as pillars ſuſtain the fabrick of the whole body, are either

- either more loosly as by *Diarthroſis*, that is a kind of Articulation not very ſtrait, as by which it might have opportunity to perform diverſe motions: of this compoſure or Articulation of bones there are three kinds, as
  - *Enarthroſis*, when the head of a bone is wholly received in the cavity of another, and hid therein, as the Thigh-bone is joyned with the Huckle-bone.
  - *Arthrodia*, when in a lightly engraven and not much depreſſed cavity the head of another bone is not wholly hid, but only received in part thereof; ſo that unleſs nature had otherwiſe provided a ſufficient receptacle for the head of this bone (as by the ligaments of the neighbouring Muſcles) it would otherwiſe have been in perpetuall danger of diſlocation. Thus the Arm-bone is faſtened to the ſhoulder-blade.
  - *Ginglymos*, when the bones mutually receive each other, ſuch like compoſition hath the Cubit and Arm-bone.
- or Conjoined by that which they call *Arthrodia*, or Articulation, as when they ſo concur & are bound together, that ſome Heterogeneous ſubſtance may be noted betwixt them, but the bones thus compoſed are knit two manner of wayes, that is,
- or more ſtraitly, as by *ſynarthroſis*, when the bones are more ſtraitly knit ſo that they can perform no motions in the body. Of this Articulation there are alſo 3 kinds, that is,
  - *Gomphyſis*, as when one bone ſo receives another as a Pin is faſtened in the hole made by a piercer, thus the teeth are faſtened in the Jaws.
  - *Sutura*, like a Saw, or teeth of a combe; as the bones of the skull are mutually knit together, or as ſcales, or tiles are laid, after which manner the ſtony bones are faſtened to theſe of the *Synciput*.
  - *Harmonia*, which is by interpoſition of a ſimple line, which parts bones abutting one upon another, as the bones of the Noſe.

The 18. of the *Larinx*.

The Throttle compoſed of three griſtles hath eighteen or twenty muſcles, of which ſix or eight are common, and twelve proper; Of the common there are two above, two below, and two at the ſides of the firſt griſtle, to which we may add theſe two which ſerve for the opening of the *Epiglottis*, which are alwayes found in great four-footed beaſts for to preſs down the *Epiglottis*.

The proper are twelv, ewhich almoſt all of them come from the ſecond griſtle, ſo to be inſerted into the firſt and third, of which ſome are before, others behind the *Thyroides*. Beſides theſe there are the *Maſtoidei* which bend the head.

The head is moved by 14 Muſcles.

But in the back part of the Neck there are twelve muſcles alſo appointed for to move the head, ſo that in all there are fourteen muſcles ſerving for the motion of the head, the two fore *Maſtoidei*, and the twelve hind muſcles, that is to ſay, the two *Splenii*, two *Complexi*, four Right, and ſo many oblique, which are very ſhort, ſo that they paſs not beyond the firſt and ſecond *vertebra*.

The 8. muſcles of the neck.

The Neck hath eight Muſcles, of which two are called the long, lying before upon the bodies of the *Vertebræ*; the two *Scaleni*, which are at the ſides; the two *Spinati*, which run alongſt the Spine; the two tranſverſe, which go to the tranſverſe proceſs of the Cheſt.

The Muſcles of the cheſt 81

The Cheſt hath 81 Muſcles, of which ſome are on the fore part, ſome on the hind, others on the ſides; they are all combined and coupled together except the Midriffe. Now of theſe there are the two *Subclavii*; the two great Saw-muſcles which proceed from the baſis of the ſhoulder-blade; the four little *Rhomboides* or ſquare muſcles, that is, two above, and two below; the two *Sacrolumbi*, the two binders of the Griſtles within the Cheſt.

Beſides there are twenty and two externall and as many internall Intercoſtall muſcles, twenty four *Intercartilaginei*, that is, twelve externall and as many internall; ſo that the Intercoſtall, and *Intercartilaginei* are 68, which with the twelve before mentioned make the number of 80 Muſcles. Add to theſe the Midriffe being without an aſſociate, and you ſhall have the number formerly mentioned, to wit, 81. But alſo if you will add to theſe the Muſcles of the lower belly, I will not much gainſay it, becauſe by accident they help inſpiration and exſpiration.

The 8. muſcles of the lower belly.

Wherefore of the eight muſcles of the *Epigaſtrium*, there are four oblique, of which two are deſcendent and ſo many aſcendent; two right, to which you may add the two Aſſiſting

or

or Pyramidall muſcles which come from the ſhare-boue, if it pleaſe you to ſeparate them from the head of the right muſcles.

There are ſix or eight muſcles of the Loins, of which two bend the loins, which are the triangular; the two *Semiſpinati*; two *Sacri*; two are in the midſt of the back, which for that cauſe we may call the *Rachitæ* or chin-muſcles. Now, that hereafter we may ſeverally and diſtinctly ſet down the muſcles of the exereme parts, we will come to the privities. The 6. or 8. of the loins.

Where for the uſe of the teſticles there are two muſcles called the *Cremaſteres*, or Hanging muſcles. At the root of the yard, or *Perinæum*, there are four others, partly for the commodi ous paſſing of the urin and ſeed, and partly for erecting the yard. The *Sphincter* muſcle is ſeated at the neck of the Bladder. The two Cremaſters of the Teſticles.

At the end of the right gut are three muſcles, two *Levatores Ani*, or lifters up of the fundament, and one *Sphincter* or ſhutting muſcle. Now let us proſecute the muſcles of the extremities, or limbs. But it will be ſufficient to mention only the muſcles of one ſide, becauſe ſeeing theſe parts of the body are double, thoſe things which are ſaid of the one may be applyed to the other. The three of the fundament.

Wherefore the muſcles of the Arm, beginning with theſe of the ſhoulder-blade, at the leaſt, are 42. for there are four of the ſhoulder-blade: of the Arm properly or particularly ſo called, ſeven or eight; and there are three, four or five proper muſcles of the Cubit; that is, appointed for the performance of the motions thereof; in the inner part of the Cubit are ſeven, and as many in the outer; but thoſe of the hand are reckoned thirteen at the leaſt. The muſcles of the Arm in generall 32.

The fourth of the ſhoulder-blade are the *Trapezius* reſembling a Monks Cowl, which moves it upwards and downwards, and draws it backwards; the ſecond is the *Levator*, or lifter-up; the third the great *Rhomboides* lying under the *Trapezius*. The fourth, the leſſer ſaw muſcle which is inſerted into the *Coracoides*. The arm is moved forwards, backwards, upwards, downwards and circularly.

The Pectorall muſcle ariſing from the Clavicle, Breſt-bone and neighbouring ribs, draws it forwards; the *Humilis* or low muſcle coming from the lower rib of the ſhoulder-blade draws it backwards; the *Deltoides* upwards; and the *Latiſſimus* downwards, and ſomewhat backwards. But the three ſeated about the ſhoulder-blade move it about, or circularly.

The *Epomis* or *Scapularis* upwards; the *Superſcapularis*, which may ſeem two, backwards and downwards; the *Subſcapularis* which is in the Cavitie of the ſhoulderblade, forwards, ſo that by a certain viciſſitude and ſucceſſion of action they move it circularly. Two muſcles bend the Cubit, the one named *Biceps* or twoheaded, and the other *Brachiæus* or the Arm muſcle; but one, two or three muſcles extend it; for if you have reſpect to the original, this muſcle hath two or three heads, but one only inſertion.

In the inſide of the cubit are ſeven muſcles, one *Palmaris*, two wriſt benders; two *pronatores*, one ſquare, another in ſome ſort round; two finger benders, and one *Abductor* or Drawer aſide. Theſe fourteeen internall and externall muſcles of the Cubit, do not indeed move the Cubit, but only ſeated there move the wand and with it the hand. Theſe are the thirteen muſcles of the hand; the *Thenar* which may not only be divided into two, but into ſix, not only by the diverſe actions it performs, but alſo by the branches divided by a manifeſt ſpace between them; the ſecond is called the *Hypothenar*, which lies under the little finger, as the *Thenar* doth under the thumb; the third is the *Abductor* of the thumb; then follow the four *Lumbrici* and ſix *Interoſſes*, although eight may be obſerved.

The whole leg hath at the leaſt 50 muſcles, for we reckon there are fourteen muſcles in the thigh; there are eleven made for the uſe of the Leg; there are nine ſeated in the Leg, three before, and ſix behind, which ſerve for the uſe of the foot and toes; in the foot are ſeated ſixteen. Therefore of the fourteen muſcles ſerving the thigh two bend it, one called the *Lumbaris*, the other ariſing from the cavity of the Hanch bone; but the three which make the Buttocks and the *Triceps* or Three-headed muſcle, (which if you pleaſe, you may divide into three) extend it. Beſides theſe the four twin muſcles, and two *Obturators*, of which the one is internal, and the other external turn the thigh about. The leg hath eleven; that is, the Long, the membranous, the four *Poſtici* or hind muſcles (three of which come from the Hucklebone, but the other from the commiſſure of the Share bone) the right, the two vaſt, the *Crureus* or Leg muſcle, and the *Popliteus*, or ham muſcle. Theſe ſeated in the leg for the uſe of the foot and toes are three fore, and ſix hind muſcles: two of the fore bend the foot, one of which is called the *Tibiæus anticus*, the other *Peronæus*, which you may divide into two. The third the bender of the toes, although it alſo partly bend the foot, to which alſo the bender of the thumb may be revoked. One of the hind is the Toe-bender, others extend the foot; and are in this order; two Twins, one *Plantaris*, one *Soleus*, one *Tibiæus poſticus* and the great bender of the toes, to which may be revoked the bender of the thumb. Of the ſixteen ſeated in the foot, one is above, ſeated on the back of the foot, which wee call the *Abductor* of the Toes; another in the ſole of the foot; to wit, the little bender of the Toes, which goes to the ſecond joint of the Toes alongſt the inſide of the foot; the other lends his help to the great Toe, which you may call the *Abductor* of the thumb; ano- The muſcles of the leg in generall 50.

ther is ſeated on the outſide for the uſe of the little toe. To theſe are added the four *Lumbrici*, beſides the eight *Interoſſes*; or if you had rather, ten. And thus much may ſuffice for the enumeration of the muſcles.

*The Figure of the muſcles when the skin with its veins, the fat, and all the fleſhy membranes are taken away, that part of the fleſhy membrane excepted, which takes upon it the nature of a muſcle, as being conjoined with the muſcles.*

*a*, the muſcle of the forehead.
*b*, the temporall muſcle.
*c*, the muſcle ſhutting the eyelid.
*d*, the muſcle opening the wings of the noſe.
*e*, the fore part of the yoak-bone.
*f*, the muſcle of the upper lip tending to the noſe.
*g*, the beginning of the maſſeter or grinding muſcle.
*h*, the broad muſcle conſiſting of a fleſhy membrane.
*i*, *k*, the beginning therof which riſes immediatly from the coller-bone and the top of the ſhoulder.
*l*, that part thereof which bends forwards to *l*.
*m*, the muſcle which lifts up the arm.
*n*, the pectorall muſcle.
*o*, the membranous part of this muſcle which is joined to the nervous part of the firſt muſcle of the *Abdomen*, or belly.
*q*, *q*, the fleſhy portion thereof, from the 6 and 7 ribs, and the inſertion thereof. *r* the muſcle drawing down the arm. *ſ*, the oblique deſcending muſcle of the lower belly. *t*, *t*, *t*, the inſertion of the greater ſaw muſcle. u u. the *linea alba* or white line, at which the two oblique deſcendent muſcles meet, covering the whole belly. *x*, the yard, the ſkin being taken away. *y*, the veſſels of ſeed. *z* the teſticles wrapped in the fleſhy membrane. *ϱ*, the fore muſcle bending the cubit. *γ*, *γ*, the hind muſcle bending the cubit. *δ*, the muſcle extending the cubit. *ε*, the two-headed muſcle extending the wriſt. *ζ*, the muſcle producing the broad tendon on the back of the hand. *ζ*, his tendon. *η*, the muſcle turning up the Wand. *θ*, the upper muſcle flatting the Wand. *ι*, the ſecond of the arm-benders, whoſe beginning is *κ*, and tendon *λ*. *ο*, a portion of the muſcle, whereof one part yeelds tendons to the wriſt, the other to the thumb. *π*, the fleſhleſſe articulation of the thumb. *ρ*, a muſcle inſerted into the wriſt, lying neer to the following muſcle. *σ*, a muſcle divided into two tendons, the one whereof is inſerted into the firſt joint of the thumb, the other into the following. *τ*, the firſt muſcle of the thigh, whoſe head is at *υ*, and tendon at *φ*, and inſertion at *χ*. *ψ*, the end of the ſecond muſcle of the thigh. *ω*, the end of the third muſcle of the thigh. 1, the ſixt muſcle of the leg, his beginning at 2. almoſt wholly membranous at 3. 4, the ninth muſcle of the leg. 5, the eight of the leg. 6, a portion of the ſixth and ſeventh of the thigh. 7, the Glandules of the groins. 8, the eight of the thigh. 9, the ſecond of the leg. 11, the innermoſt of the ankle. 12, the ſixth muſcle of the foot, his originall 13. end 14. 15, the ſeventh of the foot. 16, the tendon of the muſcle lifting up the great toe. 17, the muſcles extending the four other toes. 18, the abductor of the great toe. 19, a tranſverſe ligament. 20, a tendon of the ninth muſcle of the foot. 21, the firſt muſcle. 22, the fourth muſcle of the foot. 23. the tendon of the third muſcle. 24, a muſcle bending the third bone of the four leſſer toes.

The

# THE SEVENTH BOOK Of Tumors against Nature in generall.

## CHAP. I.

*What a Tumour against Nature, vulgarly called an Impostume, is, and what be the differences thereof.*

AN Impostume, commonly so called, is an affect against nature, composed and made of three kinds of diseases, Distemperature, ill Conformation, and Solution of Continuity, concurring to the hindering or hurting of the Action. An humor, or any other matter, answering in proportion to a humor, abolishing, weakning, or depraving of the office or function of that part or body in which it resides, causeth it.

What an Impostume vulgarly so called is.

The differences of Impostumes, or unnatural tumors.

The differences of Impostumes are drawn from five things; quantity, matter, accidents, the nature of the part, which they affect or possess; and lastly, their efficient causes. I have thought good for the better understanding of them, to describe them in this following Scheme.

*A Table of the differences of Tumors.*

- From their quantity, by reason whereof *Impostumes* are called
  - Great, which are comprehended under the generall name of Phlegmons, which happen in the fleshy parts, by *Galen, Lib. de tumor. contra naturam, & lib. 2. ad Glauconem.*
  - Indifferent, or of the middle sort, as Fellons.
  - Small, as those which *Avicen* calls *Bothores*, i. Pushes and Pustules, all kind of Scabs and Leprosies; and lastly, all small breakings out.
- From their accidents, as
  - Colour, from whence Impostumes are named white, red, pale, yellow, blew or black, and so of any other colour.
  - Pain, hardness, softness, and such like, from whence they are said to be painfull, not painfull, hard, soft, and so of the rest.
- From the matter, of which they are caused and made, which is either
  - Natural
    - Hot, and that either
      - Sanguin, from whence a true *Phlegmon.*
      - Cholerick, frō whence a true *Erysipelas.*
    - Cold, & that either,
      - Phlegmatick, frō whence a true *Oedema.*
      - Melācholick, frō whēce a perfect *Scirrhus.*
  - or
  - Not naturall, which hath exceeded the limits of its naturall goodnesse, from whence illegitimate tumors, therefore
    - of a sanguine humour,
      - Carbuncles, Gangrenes, eating ulcers, Sphacels are caused.
    - of a cholerick humour,
      - Of the grosser, the eating *Herpes*, of the subtiler the *Herpes miliaris* is made.
    - of a phlegmatick humor,
      - Watery and flatulent Impostumes, the Kings evil, knots and al phlegmatick swellings and excrescences.
    - of a melancholick humor.
      - The exquisit or perfect *Scirrhus*, hardnesses and all sorts of cancerous Tumors.
- From the condition and nature of the parts which they possess, from whence the *Ophthalmia*, is a Phlegmon of the eyes. *Parotis* a tumor neer the ears. *Faronychia* or a whitlow at the roots of the nails; and so of the rest.
- From the efficient causes, or rather the manner of doing. For some impostumes are said to be made by defluxions, others by congestion, those are commonly hot, and the other commonly cold, as it shal more manifestly appear by the following chapter.

## CHAP. II.

*Of the generall cauſes of Tumors.*

After what manner tumours againſt nature are chiefly made.

THere are two generall cauſes of Impoſtumes, Fluxion, and Congeſtion. Defluxions are occaſioned, either by the part ſending, or receiving; the part ſending diſcharges it ſelf of the humors, becauſe the expulſive faculty reſident in that part is provoked to expell them, moved thereto, either by the troubleſomneſs of their quantity or quality. The part receiving draws, and receives occaſion of heat, pain, weakneſſe (whether naturall, or accidentall) openneſſe of the paſſages, and lower ſituation.

Three cauſes of heat.

The cauſes of heat, in what part ſoever it be, are commonly three, as all immoderate motion (under which frictions are alſo contained,) externall heat, either from fire or ſun, and the uſe of acrid meats and medicines.

Four cauſes of pain.

The cauſes of pain are four, the firſt is a ſodain and violent invaſion of ſome untemperate thing, by means of the four firſt qualities; the ſecond is ſolution of continuity, by a wound, luxation, fracture, contuſion, or diſtention; the third, is the exquiſit ſenſe of the part, for you feel no pain in cutting a bone, or expoſing it to cold or heat; the fourth is, the attention, as it were, of the animall faculty; for the mind diverted from the actuall cauſe of pain, is leſſe troubled, or ſenſible of it.

Two cauſes of weakneſſe.

A part is weak, either by its nature, or by ſome accident; by its nature, as the Glandules and the Emunctories of the principall parts; by accident, as if ſome diſtemper, bitter pain, or great defluxion have ſeized upon it, and wearied it, for ſo the ſtrength is weakned, and the paſſages dilated. And the lowneſſe of ſite yeelds opportunity for the falling down of humors.

Two cauſes of congeſtion.

The cauſes of congeſtion are two principally, as the weakneſſe of the concoctive faculty, which reſides in the part, (by which the aſſimilation into the ſubſtance of the part of the nouriſhment flowing to it is fruſtrated) and the weakneſſe of the expulſive faculty; for whilſt the part cannot expell ſuperfluities, their quantity continually encreaſes.

And thus oftentimes cold Impoſtumes, have their originall from a groſſe and tough humor, and ſo are more difficult to cure.

Laſtly, all the cauſes of Impoſtumes may be reduced to three; that is, the primitive, or externall; the antecedent, or internall; and the conjunct, or containing, as we will hereafter treat more at large.

## CHAP. III.

*The ſignes of Impoſtumes or Tumors in generall.*

The principall ſigns of tumors are drawn from the eſſence of the part.

BEfore we undertake the cure of Tumors, it is expedient to know their kinds and differences, which knowledg muſt be drawn from their proper ſigns, the ſame way, as in other diſeaſes. But becauſe the proper and principall ſigns of tumors are drawn from the eſſence of the part they poſſeſſe, we muſt firſt know the parts, and then conſider what their eſſence and compoſition are.

We are taught both by skill in Anatomy, and the obſervation of the deprived function, eſpecially when the affected part is one of thoſe which lie hid in the body; for we know whether or no, the externall parts are affected with a tumor againſt nature, by comparing that with his naturall which is contrary. For comparing the ſound part with the diſeaſed, we ſhall eaſily judge whether it be ſwollen, or no.

But becauſe it is not ſufficient for a Chirurgeon only to know theſe generall ſigns (which are known even to the vulgar) he muſt attentively obſerve ſuch as are more proper and neer. And theſe are drawn from the difference of the matter and humors, of which the tumors conſiſt.

*Lib. 2. ad Glauc. & 13. method.*

For this *Galen* teaches, that all differences of tumors ariſe from the nature aud condition of the matter which flows down and generates the tumor; alſo they are known by ſuch accidents as happen to them, as colour, heat, hardneſs, ſoftneſs, pain, tenſion, reſiſtance.

The proper ſigns of a ſanguin tumor, of a phlegmatick, of a melancholick, of a cholerick.

Wherefore pain, heat, redneſſe, and tenſion indicate a ſanguine humour; coldneſs, ſoftneſſe, and no great pain, phlegm; tenſion, hardneſs, the livid colour of the part, and a pricking pain by fits, melancholy; and yellowiſh and pale colour, biting pain without hardneſs of the part, choler.

The knowledg of tumors by their motion and exacerbation.

*Lib. 2. Epidem.*

And beſides, Impoſtumes have their periods and exacerbations following the nature and motion of the humors of which they are generated. Wherefore by the motion and fits it will be no difficult matter to know the kind of the humor; for as in the ſpring, ſo in the morning the blood is in motion; as in the ſummer, ſo in the midſt of the day, choler; as in Autumn, ſo in the evening, melancholy; as in Winter, ſo in the night the exacerbation of phlegm are moſt predominant. For *Hippocrates* and *Galen* teach, that the year hath circuits of diſeaſes, ſo that the ſame proportion of the exceſs and motion of humors, which is in the four ſeaſons of the year, is alſo in the four quarters of each day. Im-

Impoſtumes which are curable have four times, their beginning, encreaſe, ſtate, and declination, and we muſt alter our medicines, according to the variety of theſe times. We know the beginning by the firſt ſwelling of the part; The encreaſe, when the ſwellling, pain, and other accidents do manifeſtly encreaſe, and enlarge themſelves; the ſtate, when the foreſaid ſymptomes increaſe no more, but each of them, becauſe at their height, remain in their ſtate immoveable, unleſſe the very matter of the tumor degenerate; and change it ſelf into another kind of humor; The declination, when the ſwelling, pain, feaver, reſtleſneſſe are leſſened. And from hence the Chirurgeon may preſage what the end of the tumor may be; for tumors are commonly terminated four manner of wayes, if ſo be that the motion of the humors cauſing them be not intercepted, or they without ſome manifeſt cauſe, do flow back into the body.

The beginning of an impoſtume.
The encreaſe.
The ſtate.

Therefore firſt they are terminated by inſenſible tranſpiration, or reſolution; ſecondly, by ſuppuration when the matter is digeſted and ripened; thirdly, by induration, when it degenerates into a Scirrhus, the thinner part of the humor being diſſolved; the fourth, which is the worſt of all, by a corruption and Gangrene of the part, which is, when overcome with violence, or the abundance or quality of the humor, or both, it comes to that diſtemper, that it loſes its proper action.

It is beſt to terminate a tumor by reſolution; and the worſt by corruption; ſuppuration and induration are between both, although that is far better than this. The ſigns by which the Chirurgeons may preſage that an Impoſtume may be terminated by reſolving, are the remiſſion or ſlacking of the ſwelling, pain, pulſation, tenſion, heat, and all other accidents, and the unaccuſtomed livelineſs and itching of the part; and hot Impoſtumes are commonly thus terminated, becauſe the hot humor is eaſily reſolved, by reaſon of its ſubtilty.

The ſigns of a tumor to be terminated by reſolution.

Signs of ſuppuration are the intenſion or encreaſe of pain, heat, ſwelling, pulſation, and the feaver; for according to *Hippocrates*, pain and the feaver are greater when the matter is ſuppurating, than when it is ſuppurated.

The ſigns of ſuppuration.

The Chirurgeon muſt be very attentive to know and obſerve when ſuppuration is made; for the purulent matter oft-times lies hid (as *Hippocrates* ſaith) by reaſon of the thickneſs of the part lying above, or over it.

The ſigns of an Impoſtume degenerating into a Scirrhous hardneſſe, are the diminution of the tumor, and hardneſs remaining in the part. The cauſes of the hardneſs not going away with the ſwelling, are the weakneſs of nature, the groſneſs and toughneſs of the humor, and unskilfulneſs of the Chirurgeon, who by too long uſing reſolving things hath occaſioned, that the more ſubtil part of the humor being diſſolved, the reſt of the groſſer nature like earthy dregs remains concrete in the part. For ſo Potters veſſels dried in the Sun grow hard. But the unskilfull Chirurgeon may occaſion a Scirrhous hardneſs by another means; as by condenſating the skin, and incraſſating the humors, by too much uſe of repercuſſives. But you may perceive an Impoſtume to degenerate into a Gangrene thus, if the accidents of heat, redneſs, pulſation and tenſion ſhal be more intenſe, than they are wont to be in ſuppuration; if the pain preſently ceaſe without any manifeſt cauſe; if the part wax livid or black; and laſtly, if it ſtink.

The ſigns and cauſes of a tumor terminated in a *Scirrhus*.

The ſigns of a Gangrene at hand.

But we ſhall treat of this more at large when we come to treat of the Gangrene and *Sphacelus*. A ſodain diminution of the tumor, and that without manifeſt cauſe, is a ſign of the matter fallen black, and turned into the body again, which may be occaſioned by the immoderate uſe of refrigerating things. And ſometimes much flatulencie mixed with the matter, although there be no fault in thoſe things which were applied.

Of diſappearance of a tumor, and the ſigns thereof.

Feavers and many other malign Symptomes, as ſwoundings and convulſion, by tranſlation of the matter to the noble parts, follow this flowing back of the humor into the body.

## CHAP. IV.

### *Of the Prognoſtiques in Impoſtumes.*

TUmors ariſing from a melancholy, phlegmatick, groſſe, tough, or viſcous humor, aske a longer time for their cure, than thoſe which are of bloud or choler. And they are more difficultly cured which are of humors not naturall, than thoſe which are of humors yet contained in the bounds of nature.

Cold tumors require a longer cure.

For thoſe humors which are rebellious, offend rather in quality, than in quantity, and undergoe the divers forms of things diſſenting from nature, which are joined by no ſimilitude or affinity with things naturall, as ſuet, poultis, hony, the dregs of oil, and wine; yea, and of ſolid bodies, as ſtone, ſand, coal, ſtraws; and ſometimes of living things, as Wormes, Serpents, and the like monſters.

Tumors made of matter not naturall, are more difficultly cured.

The tumors which poſſeſſe the inner parts, and noble entrails, are more dangerous and deadly, as alſo thoſe which are in the joints, or neer to them. And theſe tumors which ſeiſe upon great veſſels, as veins, arteries, and nerves, for fear of great effuſion of blood,

wasting of the ſpirits and convulſion. So Impoſtumes of a monſtrous bigneſs are often deadly by reaſon of the great reſolution of the ſpirits cauſed by their opening. Thoſe which degenerate into a *Scirrhus* are of long continuance and hard to cure, as alſo thoſe which are in hydropick, leprous, ſcabby and corrupt bodies, for they often turn into malign and ill conditioned uleers.

*Hippo. Aph. 8. ſect. 6.*

## CHAP. V.

### *Of the generall cure of Tumors againſt Nature.*

What muſt be conſidered in undertaking the cure of tumors.

THere be three things to be obſerved in cure of Impoſtumes. The firſt is the eſſence thereof; the ſecond, the quality of the humor cauſing the Impoſtume; the third, the temper of the part affected. The firſt indication drawn from the eſſence, that is, from the greatneſſe or ſmalneſſe of the tumor, varies the manner of curing, for the medicines muſt be increaſed or diminiſhed according to the greatneſs of the tumor. The ſecond, taken from the nature of the humor alſo changes our counſell, for a *Phlegmon* muſt be otherwiſe cured than an *Eryſipelas*, and an *Oidema* than a *Scirrhus*, and a ſimple tumor, otherwiſe than a compound. And alſo you muſt cure after another manner a tumor coming of an humor not natural, than that which is of a natural humor, and otherwiſe that which is made by congeſtion, than that which is made by defluxion. The third Indication is taken from the part in which the tumor reſides; by the nature of the part we underſtand its temperature, conformation, ſite, faculty, and function.

What we muſt underſtand by the nature of the part.

The temperature indicates that ſome medicines are convenient for the fleſhy parts, as thoſe which are more moiſt; others for the nervous, as more drie; for you muſt apply ſome things to the eye, and others to the throat; one ſort of things to theſe parts which by reaſon of their rarity are eaſily ſubject to defluxion, another to thoſe parts which by their denſity are not obnoxious to it.

But we muſt have good regard to the ſite of the part, as if it have any connexion with the great veſſels, and if it be fit to powre forth the matter and humor when it is ſuppurated.

What we muſt underſtand by the faculty of the part.

*Galen* by the name of Faculty underſtands the uſe and ſenſe of the part. This hath a manifold indication in curing, for ſome parts are principall, as the Brain, Heart, and Liver; for their vertue is communicated to the whole body, by the nerves, arteries, and veins.

What we muſt conſider in performing the cure.

Others truly are not principall, but yet ſo neceſſary that none can live without them, as the ſtomach. Some are endued with a moſt quick ſenſe, as the eye, the membranes, nerves, and tendons; wherefore they cannot indure acrid and biting medicines. Having called to mind theſe indications, the indication will be perfected by theſe three following intentions, as if we conſider the humor flowing down, or which is ready to flow; the conjunct matter, that is, the humor impact in the part; the correction of accidents; yet ſo that we alwaies have care of that which is moſt urgent and of the cauſe. Therefore firſt repercuſſives muſt be applied for the antecedent matter, ſtrong or weak, having regard to the tumor as it is then, only excepting ſix conditions of tumors; the firſt is, if the matter of the tumor be venenate: the ſecond, if it be a criticall abſceſs: the third, if the defluxion be neer the noble parts: the fourth, if the matter be groſſe, tough, and viſcid: the fifth, when the matter lies far in, that is, flows by the veins which lies more deep: the ſixth, when it lies in the Glandules. But if the whole body be plethorick, a convenent diet, purging and Phlebotomie muſt be appointed, frictions and bathes muſt be uſed. Ill humors are amended by diet and purging. If the weakneſs of the part receiving draw on a defluxion, it muſt be ſtrengthned.

What things diſſwade us from uſing repercuſſives.

If the part be inferior in its ſite, let the patient be ſo ſeated, or layed, that the part receiving, as much as may be, may be the higher. If pain be the cauſe of defluxion, we muſt aſſwage it by things mitigating it. If the thinneſs, or lightneſs of the humor cauſe defluxion, it muſt be inſpiſſate by meats and medicines. But for the matter contained in the part, becauſe it is againſt nature, it requires to be evacuate by reſolving things, as cataplaſmes, ointments, fomentations, cupping-glaſſes; or by evacuation, as by ſcarifying, or by ſuppurating things, as by ripening and opening the Impoſtume. Laſtly, for the conjunct accidents, as the Feaver, pain and ſuch like, they muſt be mitigated by aſſwaging, mollifying and malaxing medicines, as I ſhall ſhew more at large hereafter.

## CHAP. XXXV.

*Of the four principall and generall Tumors, and of other Impoſtumes which may be reduced to them.*

THe principall and chief Tumors which the abundance of humors generate, are four, a *Phlegmon*, *Eryſipelas*, *Oedema* and *Scirrhus*: innumerable others may be reduced to theſe, diſtinguiſhed by divers names according to the various condition of the efficient cauſe and parts receiving. Wherefore a *Phygethlum*, *Phyma*, Fellon, Carbuncle, inflammation of the eyes, Squincy, *Bubo*, and laſtly, all ſorts of hot and moiſt tumors may be reduced to a Phlegmon. The *Herpes miliaris*, the eating *Herpes*, Ringwormes and Tetters and all impoſtumes brought forth by choler, are contained under an *Eryſipelas*. *Atheromata*, *Steatomata*, *Melicerides*, the *Teſtudo*, or *Talpa*, *Ganglion*, Knots, Kings-Evill, Wens, watery Ruptures, the *Aſcites* and *Leucophlegmatia* may be reduced to an *Oedema*, as alſo all flatulent tumors, which the abundance of corrupt Plegm produces.

What tumors may be reduced to a Phlegmon. Which to an *Eriſipelas*. Which to an *Oedema*.

In the kindred of the *Scirrhus* are reckoned a Cancer, Leproſie, Warts, Corns, a *Thymus*, a *Varix*, *Morphew*, black and white, and other Impoſtumes ariſing from a Melancholy humor.

Which to a *Scirrhus*.

Now we will treat of theſe Tumors in particular, beginning with a Phlegmon.

## CHAP. VII.

*Of a Phlegmon.*

A Phlegmon is a generall name for all Impoſtumes, which the abundance of inflamed bloud produces. That is called a true Phlegmon, which is made of laudable bloud, offending only in quantity. But a baſtard Phlegmon, or a Phlegmonous Impoſtume hath ſome other, and proper name; as a Carbuncle, Fellon, Gangrene, Sphacel, and the like malign Puſtules. So when there is a conflux of divers humors into one tumor, divers kinds of Phlegmonous Impoſtumes called by divers names, according to the more abundant humor, ariſe; as if a ſmall portion of Phlegm ſhall be mixed with a greater quantity of bloud, it ſhall be called an *Oedematous Phlegmon*; but if on the contrary, the quantity of phlegm be the greater, it ſhall be named a phlegmonous *Oedema*, and ſo of the reſt; alwayes naming the tumor, from that which is predominant in it.

What a true Phlegmon is? A Phlegmon one thing, and a Phlegmonous tumor another.

Therefore we muſt obſerve that all differences of ſuch tumors ariſe from that, either becauſe the bloud cauſing it offends only in quantity; which if it do, it cauſes that tumor which is properly called a Phlegmon; if in quality, it makes a phlegmonous tumor, becauſe the matter thereof is much departed from the goodneſs of bloud.

But bloud is ſaid to offend in quantity, either by admixture of ſome other matter, as Phlegm, Choler, or Melancholy, from whence proceeds *Oedematous*, *Eryſipelous* and *Scirrhous* Phlegmons; or by corruption of its proper ſubſtance, from whence Carbuncles, and all kinds of Gangrens; or by concretion, and when nature is diſappointed of its attempted and hoped for ſuppuration, either by default of the air, or patient, or by the error of the Phyſitian; and hence oft times happen *Atheroma's*, *Steatoma's*, and *Melicerides*. Although theſe things be ſet down by the Ancients, of the ſimple and ſimilar matter of the true Phlegmon; yet you muſt know, that in truth there is no impoſtume, whoſe matter exquiſitely ſhews the nature of one, and that ſimple humor without all admixture of any other matter; for all humors are mixed together with the bloud, yet from the plenty of bloud predominating, they are called Sanguine, as if they were of bloud alone.

Wherefore if any tumors reſemble the nature of one ſimple humor, truly they are not of any naturall humor, but from ſome humor which is corrupt, vitiated and offending in quality; for ſo bloud by aduſtion degenerates into choler and melancholy.

Therefore a true Phlegmon is defined by *Galen*; a tumor againſt nature, of laudable blood, flowing into any part in too great a quantity.

*Gal. lib. de tumoribus, &c. ad Glauc. Hippoc. lib. de vuln. cap. Gal. lib. de tumor. præter naturam*

This tumor though moſt commonly it be in the fleſh, yet ſometimes it happens in the bones, as *Hippocrates* and *Galen* witneſs.

A Phlegmon is made and generated thus: when bloud flows into any part, in too great a quantity; firſt the greater veins and arteries of the affected part are filled, then the middle, and laſtly, the ſmalleſt and capillary; ſo from thoſe thus diſtended, the blood ſweats out of the pores and ſmall paſſages like dew; and with this the void ſpaces which are between the ſimilar parts are firſt filled, & then with the ſame bloud all the adjacent parts are filled, but eſpecially the fleſh, as that which is moſt fit to receive defluxions, by reaſon of the ſpongious rarity of its ſubſtance; but then the nerves, tendons, membranes, and ligaments, are likewiſe ſtuffed full; whereupon a Tumor muſt neceſſarily follow, by reaſon of the repletion which exceeds the bounds of nature; and from hence alſo are tenſion and reſiſtance; and

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pain alſo happens at the ſame time, both by reaſon of the tenſion and preternaturall heat.

The cauſe of a bearing Pain in a Phlegmon.

And there is a manifeſt pulſation in the part, ſpecially whilſt it ſuppurates, becauſe the veins, arteries, and nerves, are much, being they are not only heated within by the influx of the fervid humor, but preſſed without by the adjacent parts. Therefore ſeeing the pain comes to all the foreſaid parts becauſe they are two immoderately heated and preſſed, the arteries, which are in the perpetuall motion of their *ſyſtole & diaſtole*, whilſt they are dilated, ſtrike upon the other inflamed parts, whereupon proceeds that beating pain.

Hereunto add, the Arteries then filled with more copious and hot bloud, have greater need to ſeek refrigeration by drawing in the encompaſſing Air; wherefore they muſt as of neceſſity, have a conflict with the neighbouring parts which are ſwollen and pained. Therefore from hence is that pulſation in a Phlegmon which is defined by *Galen*, an agitation of the arteries, painfull and ſenſible to the Patient himſelf; for otherwiſe as long as we are in health, we do not perceive the pulſation of the arteries.

*Comm. ad Aph. 21. ſect. 7.*

Wherefore theſe two cauſes of pulſation, or a pulſifick pain in a phlegmon, are worthy to be obſerved, that is, the heat and abundance of bloud, contained in the veſſels and arteries (which more frequently than their wont incite the arteries to motion, that is, to their *ſyſtole* and *diaſtole*) and the compreſſion and ſtraitning of the ſaid arteries, by reaſon of the repletion and diſtention of the adjacent parts, by whoſe occaſion the parts afflicted and beaten by the trembling and frequent pulſation of arteries are in pain.

Hence they commonly ſay, that in the part affected with a Phlegmon, they feel as it were the ſenſe or ſtroke of a Mallet or Hammer ſmiting upon it. But alſo beſides this pulſation of the arteries, there is, as it were, another pulſation with itching from the humors whilſt they putrefie, and ſuppurate, by the permixtion, motion, and agitation of vapours, thereupon ariſing.

Another kind of Pulſation in a Phlegmon.

The cauſe of heat in a Phlegmon is bloud, which whilſt it flows more plentifully into the part, is as it were troden or thruſt down, and cauſes obſtruction, from whence neceſſarily follows a prohibition of tranſpiration, and a putrefaction of the bloud, by reaſon of the preternaturall heat. But the Phlegmon looks red by reaſon of the bloud contained in it, becauſe the humor predominant in the part ſhines through the skin.

## CHAP. XXIII.

### *Of the cauſes and ſignes of a Phlegmon.*

The primitive cauſes of a Phlegmon. The Antecedent and conjunct.

THe cauſes of a Phlegmon are of three kinds; for ſome are primitive, ſome antecedent, and ſome conjunct. Primitive are falls, contuſions, ſtrains, immoderate labour, frictions, application of acrid ointments, burnings, long ſtaying or labouring in the hot Sun, a diet unconſiderate, and which breeds much bloud. The antecedent cauſes are, the great abundance of bloud, too plentifully flowing in the veins. The conjunct, the collection or gathering together of bloud impact in any part.

The ſigns of a Phlegmon,

The ſigns of a Phlegmon are ſwelling, tenſion, reſiſtance, feaveriſh heat, pain, pulſation, (eſpecially while it ſuppurates) redneſs, and others, by which the abundance of bloud is ſignified.

And a little Phlegmon is often terminated by reſolution; but a great one by ſuppuration; and ſometimes it ends in a Scirrhus, or a Tumor like a Scirrhus; but otherwhiles in a Gangren, that is, when the faculty, and native ſtrength of the part affected, is overwhelmed by the greatneſs of the defluxion, as it is reported by *Galen*. The Chirurgeon ought to conſider all theſe things, that he may apply and vary ſuch medicines as are convenient for the nature of the Patient, and for the time and condition of the part affected.

*Gal. l. de Tum.*

## CHAP. IX.

### *Of the cure of a true Phlegmon.*

What kind of diet muſt be preſcribed in a Phlegmon.

THe Chirurgeon in the cure of a true Phlegmon muſt propoſe to himſelf four intentions. The firſt of Diet; This, becauſe the Phlegmon is a hot affect and cauſes a feaver, muſt be ordained of refrigerative and humecting things, with the convenient uſe of the ſix things not naturall, that is, air, meat and drink, motion and reſt, ſleep and waking, repletion and inanition; and laſtly, the paſſions of the mind. Therefore let him make choiſe of that air which is pure and cleer, not too moiſt, for fear of defluxion, bnt ſomewhat cool; let him command meats which are moderately cool and moiſt, ſhunning ſuch as generate bloud too plentifully, ſuch will be broths not too fat, ſeaſoned with a little Borage, Lettuce, Sorrell, and Succory: let him be forbidden the uſes of all ſpices, and alſo of Garlick, and Onions, and all things which heat the bloud, as are all fatty and ſweet things, as thoſe which eaſily take fire. Let the Patient drink ſmall wine, and much allaied with water: or if the feaver be vehement, the water of the decoction of Licoris, Barly, ſweet Almonds, or water and Sugar; alwayes having regard to the ſtrength, age, and cuſtome of the Patient.

For

For if he be of that age, or have ſo led his life, that he cannot want the uſe of wine, let him uſe it, but altogether moderately. Reſt muſt be commanded; for all bodies wax hot by motion, but let him chiefly have a care that he do not exerciſe the part poſſeſſed by the phlegmon for fear of a new defluxion. Let his ſleep be moderate, neither, if he have a full body, let him ſleep by day, ſpecially preſently after meat. Let him have his belly ſoluble, if not by nature, then by art, as by the frequent uſe of glyſters and ſuppoſitories. Let him avoid all vehement perturbations of mind, as hate, anger, brawling; let him wholly abſtain from venery.

How to divert the defluxion of humors.

This manner of diet thus preſcribed, we muſt come to the ſecond ſcope, that is, the diverſion of the defluxion, which is performed by taking away its cauſe, that is, the fulneſs and ilneſs of the humors. Both which we may amend by purging and bloud-letting, if the ſtrength and age of the patient permit.

The pain muſt be aſſwaged.

But if the part receiving be weak, it muſt be ſtrengthned with thoſe things which by their aſtriction amend the openneſs of the paſſages, the violence of the humor being drawn away by cupping-glaſſes, frictions, ligatures. But if pain trouble the part, which is often the occaſion of defluxion, it muſt be mitigated by medicines aſſwaging pain.

When we muſt uſe repercuſſives.

The third ſcope is to overcome the conjunct cauſe. That we may attain to this, we muſt enter into the conſideration of the tumor, according to its times, that is, the beginning, increaſe, ſtate, and declination. For from hence the indications of variety of medicines muſt be drawn. For in the beginning we uſe repercuſſives to drive away the matter of the Phlegmon flowing down, as the white of an Egge, Oxycrate, the juices or waters of Houſleek, Plantain, Roſes; Cataplaſms of Henbane, Pomgranate, Pils, Balauſties, Bole armenick, *Terra ſigillata*, oil of Roſes, Quinces, Mirtils, Poppies.

Of theſe ſimples variety of compound medicines ariſes. This may be the form of a Cataplaſm. ℞, *far. hordei* ʒ ij. *ſucci ſemper vivi, plantag. an.* ʒ iij. *pul. malicorii, balauſtiorum & roſar. an.* ʒ ij. *ol. mirtill. & roſar. an.* ʒ i. *fiat Cataplaſma.* Another, ℞, *Plantag. ſolani, hyoſcyam. an. m.* ij. *caudæ equin. tapſi barb. centinodiæ. an. m. i. coquantur perfectè in oxycrato, piſtentur, trajiciantur, addendo pulveris mirtill. nuc. cupreſſi. & roſ. rub. an.* ʒ iij. *farin. fab.* ʒ ij. *olei roſar. & cydon. an.* ʒ i ß, mixe them and make a cataplaſm to the form of a liquid pultis. And you may uſe this liniment, by dipping linnen clothes in it, and applying to the part; ℞, *ol. nymph. & roſar. an.* ʒ iij. *aq. roſ. ſolani & plantag. an.* ʒ ij, *aceti* ʒ iij, *albumin. ovorum n.* iij. *fiat linimentum.* Alſo *ung. roſatum & ung. Album, camphor. Raſis* are good to apply to it, as in like manner, *Emp. Diacalcitheos* diſſolved in vinegar, and oil of Roſes, and alſo *Populeon* may be uſed. In the increaſe you muſt have care of the humor flowing down, and of that which already impacted in the part, did formerly fall down. Therefore repercuſſives muſt be tempered and mixed with diſcuſſing medicines, but ſo that they may carry the chief ſway, as ℞, *fol. malvæ, abſinth. plantag. an. m.* iij. *coquantur in oxycrato, contundantur, trajectis* add *farinæ fabarum & hordei an.* ʒ i. *pul. roſar. rub. & Abſinth. an.* ʒ i, *ol. roſar. & chamæm. an.* ʒ i, *fiat cataplaſma ad formam pultis ſatis liquidæ.* Another, ℞, *farinæ hord.* ʒ iij, *farinæ ſem. lini & fænugræci, an.* ʒ i, *coquantur in aqua communi, addendo ſub finem pul. mirtillorum, roſarum & chamæmeli an.* ʒ ß, *axungiæ anſeris & olei roſarum an.* ʒ i, *miſce, fiat cataplaſma.*

What locall medicines we muſt uſe in the encreaſe.

What in the ſtate.

But in the ſtate the repercuſſives, and diſcuſſives ought to be alike with ſome anodyne, or mitigating medicines, if it be painful, as ℞, *rad. Althææ* ʒ iiij, *malvæ, parietar. ana m.* ij, *coquantur ſub cineribus, addendo farin. fabarum & lentium an.* ʒ ij, *pulveris chamæm. & meliloti an.* ʒ ß, *olei chamæm. & roſar. an.* ʒ i. *axungiæ gal.* ʒ ij. *fiat cataplaſma.* Another, ℞, *micæ panis triticei aqua calida macerati* ℔ ß, *pulveris roſar. rub. & abſinth. ana* ʒ vi, *olei aneth. & mellis com. an.* ʒ ij, *miſce omnia ſimul & fiat cataplaſma ad formam pultis ſatis liquidæ*; which is of chief uſe when there is pain.

What in the declination.

But when the violence of pain and other ſymptomes are aſſwaged, it is likely that the plegmon is come to determination. Wherefore then we muſt uſe more powerfull and ſtrong diſcuſſives, and only then beginning with the more gentle, leſt the ſubtiler part of the humor being diſſolved, the groſſer, remaining in the part, ſhould grow hard, as ℞, *mal. biſmal. an. m.* iij. *coquantur, addendo farinæ hordei* ʒ ij, *mellis com.* ʒ i, *ol. chamæ. & melilot. an.* ʒ ß, *fiat cataplaſma.* Or ℞, *radi cum Brion. & Cucumer. agreſt. an.* ʒ ij, *florum chamæm. & melilot. ana m.* iij, *coquantur in hydromelite addendo farinæ, ſem. lini & fænugræc. an.* ʒ ij. *ol. aneth. axungiæ anſer. & anat. an.* ʒ i. *fiat Cataplaſma.* And this plaiſter following may here find place.

℞, *Diachyl. mag.* ʒ ij, *Empl. de melilot.* ʒ i, *olei aneth. & chamæmel. an.* ʒ ß, diſſolve them all together and make a medicine for your uſe. Or ℞, *Empl. de mucag. & oxycr. an.* ʒ ij. *Empl. Diachyl. Ireat.* ʒ i, *olei liliorum & chamæmel. quantum ſatis eſt*, and make thereof a ſoft emplaiſter.

The correction of the accidents.

The fourth ſcope of curing a Phlegmon conſiſts in correction of the accidents which accompany it; of which pain is the principall.

The diſcommodities of pain.

Wherefore the Chirurgeon muſt be diligent to aſſwage it; for beſides, that it weakens the ſtrength, and debilitates and depraves the function, it alſo cauſes defluxions by drawing the bloud and ſpirits to the part affected.

Medicines aſſwaging pain.

According to the variety of pain there muſt be variety of medicines, as ℞, *micæ panis albi in lacte tepido macerati* ℔ ß, *vitell. ovorum* iij, *ol. roſar.* ʒ ij, *croci* ϑ ß, *fiat cataplaſma.* Or ℞, *florum chamæm. & melil. an. p.* iij, *farinæ ſem. lini. & fænugræc. an.* ʒ i, *fiat cataplaſma pultis ſatis liquidæ.* Or ℞, *mucagin. rad. althææ & fænugræci an.* ʒ iij, *ol. roſar. & aneth. an.* ʒ i, *farin. ſem. lini. quantum ſatis, ut inde formetur cataplaſma ſatis molle.*

But

Narcotick medicines.

But if the pain remain,and yeeld not to theſe remedies, we muſt flie to ſtronger, making of narcoticks,or ſtupefactives,but with care leſt we benum, or dead the part; as ℞, *fol. hyoſcyani & papaver. ſub. cineribus coctorum an.* ℥ iij, *adipis ſuillæ & ol. roſ. an.* ℥ i, *croci* ℈ ij, *fiat cataplaſma:* or ℞, *fol. cicutæ & ſolani furioſi. an.* ℥ iiij, *coquantur ſub cineribus, piſtentur, & trajiciantur addendo unguent. popul. & ol. roſar. an.* ℥ i, *farin. fænugræc. quantum ſatis erit ut inde formetur cataplaſma ad formam pultis liquidæ.*

## CHAP. X.

*The cure of an ulcerated Phlegmon.*

The ſigns of a Phlegmon turning to an Abſceſs.

BUt it often happens that the humor is ſo impact in the part,that it cannot be repreſſed, and ſo groſs,that it cannot be diſcuſſed; which we may know by the greatneſs of the heat and ſwelling,by the bitterneſs of the pricking pain, the feaver,and pulſation,and heavineſs.

*Lib. 2 ad Glau. Cap. 7.*

Wherefore laying aſide all hope of diſcuſſing, we muſt come to the ſuppuratives. For which purpoſe *Galen* foments the ſwollen part with water,or oil being warm, or with both of them; and then applies this following cataplaſm.

Suppurative medicines.

℞, *farinæ tric. vel micæ panis* ℥ iiij, *ol. com.* ℥ iij. *aquæ com. quantum ſufficit, fiat cataplaſma*; Or ℞, *rad. lilior. alb. & altheæ, an.* ℥ iij, *fol. malvæ, parietar. & ſenecionis ana m.* i. *coquantur in hydromelite, piſſentur trajectis adde farin. ſem. lini* ℥ ij, *axungiæ ſuillæ, ol. liliorum an.* ℥ ß, *fiat cataplaſma:* Or ℞, *malvæ, biſmalv. violar. an. m.* i. *caricarum ping. n. x. paſſul.* ℥ ij, *coquantur in aq. com. tuſis, & trajectis, adde mellis com.* ℥ ij, *ung. baſilicon. & butyri recent. ana* ℥ i, *fiat cataplaſma.* You may profitably uſe for the ſame purpoſe *Empl. Diachylon magnum*, or *Baſilicon.* Or ℞, *Empl. Diachyl. Mag.* ℥ iij, *ung. baſilicon.* ℥ i. *ol. liliorum* ℥ ß. Of theſe mixed together make a medicine for the foreſaid uſe.

The ſigns of *pus* or matter.

When the heat,pain,feaver, and other accidents ſhall remit, when the tumor hath a ſharpe head, when by the preſſing of your finger you find the humor to flow as it were to and fro, then you may know that it is ripe.

Wherefore without any further delay the tumor muſt be opened,leſt the matter too long ſhut up, corrode the adjacent parts, and the ulcer become ſinuous and fiſtulous.

For this uſually happens, eſpecially then, when the matter is venenate or malign, or when the ſwelling is near a joint,or at the fundamennt,or ſuch like hot and moiſt places.

*Hip. lib. de Fiſtula.*

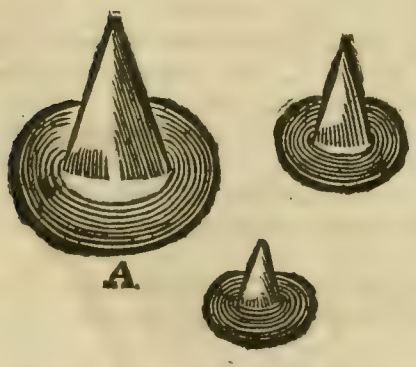
For by the decree of *Hippocrates* we ſhould anticipate the maturation of ſuch tumors by opening.

They may be opened with an inciſion knife or cauſtick,and that either actuall or potentiall. For if the Patient ſhall be heartleſs and leſs confident, ſo that he either cannot, or will not indure any inſtrument,you muſt make way for the matter by a potentiall cautery. You may alſo do the buſineſs by another ſlight, as thus.

Thruſt the point of a ſharpe knife or lancet, through a braſs counter that it may ſtand faſt in the midſt thereof; then cover it diligently with ſome Emplaiſter or Cataplaſm, that neither the Patient nor ſtanders by perceive the deceit: then laying on the plaiſter as that you would make a paſſage for the matter by that means,but when you have fitted the point to the part,where it is fit to open the tumor, ſo guide the Counter with your fingers, that you may preſently make an impreſſion into the Tumor, ſufficient for excluding the matter. I have here expreſſed three delineations of ſuch Inſtruments that you may uſe theſe, either bigger, leſſer or indifferent,as occaſion ſhall ſerve.

*Counters with the points of Knives or Launces put through them.*

B



A.

A. ſhews the Counter or peece of Silver.
B. ſhews the point of the Lancet.

But there are ſeven things which muſt be diligently conſidered in opening all ſorts of Impoſtumes. The firſt is, that you put your knife to that part of the Abſceſs which is the ſofter, and yeelds to the impreſſion of your fingers, and where it riſes into a head, or point.

point. The ſecond is, that you make choiſe of that place for diſſection which is the lowſt, that ſo the contained impuritie may the more readily flow out, and not ſtay in the paſſage. The third is, that it be made according to the wrincles of the skin, and the right fibers of the Muſcles lying next under the skin. The fourth is, that you turn your knife from the larger veſſels and Nerves worth ſpeaking of. The fifth is, that the matter contained in them be not evacuated too abundantly at once in great Abſceſſes, leſt thereby the ſtrength be dejected, the ſpirits being much waſted together with the unprofitable humor. The ſixth is, that the affected part be handled as gently as you can. The ſeventh is, that after the opening when the matter is evacuated, the Abſceſs be cleanſed, filled with fleſh, and laſtly, conſolidated and cicatrized. But ſeeing that commonly after ſuch ſections ſome part of the Tumor remains, all the contained humor being not wholly ſuppurated, the Chirurgeon may perceive that this is an implicite affect, that is, a Tumor and Ulcer. But the Cure thereof muſt be ſo, that you take away the Tumor before the Ulcer; for the Ulcer cannot be healed before the part be reſtored to its nature. Therefore the ſuppuratives formerly preſcribed muſt be uſed, and the Ulcer muſt be dreſſed for two or three dayes with this following Medicine.

*What the cure muſt be after the opening of the abſceſs.*

℞ *Vitellum unius ovi, terebinth. Venetæ, & ol. Roſar. an.* ℥ ß, *fiat medicamentum.* Then you muſt ſeek to cleanſe it by this following Medicine.

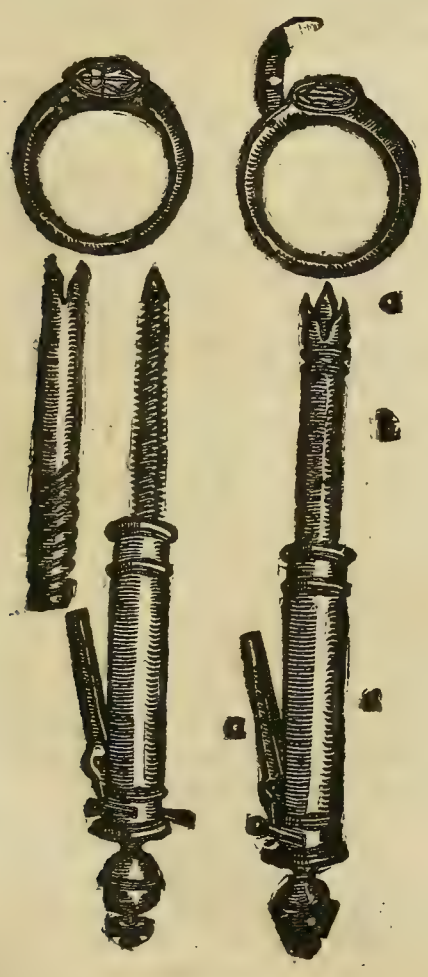
*Deterſive Medicines.*

℞ *Mellis roſar.* ℥ i, *Syrupi roſar. & tereb. Venet. an.* ℥ i ß, *far. hordei* ℥ ij, *fiat medicamentum ad uſum.* For this very purpoſe there is a ſingular Deterſive made of *Appium* or Smallage of which this is the deſcription.

*Vnguentum de Appio.*

℞ *Succi appii, plantag. beton. an.* ℥ i, *Mellis commun.* ℥ v, *terebint. Venet.* ℥ iiij, *farin. Hordei & Orobi, an.* ʒ ij, *pulveris Aloes, rad. Ireos florent. myrrhæ, an.* ʒ i, *coquatur mel. cum ſuccis quibus conſumptis addantur farinæ & pulveres, & miſceantur omnia ad formam unguenti.* But if you would cleanſe it more powerfully, you may uſe *Vnguentum Apoſtolorum*, or *Vnguentum Aureum* and *Ægyptiacum* mixed according to the ſcope you conceive in your minds; when the Ulcer ſhall ſeem ſufficiently clenſed, it ſhall be filled with fleſh and cicatrized after the manner we ſhall declare in the proper treatiſe of the cure of Ulcers.

*Other Inſtruments for opening Abſceſſes.*



*Rings in which little knives lye hid, fit for to open Abſceſſes.*

*The Delineation of a Trunke or hollow Inſtrument going with a ſpring.*

A. Shews the thicker pipe.
B. Shews another which enters and is faſtened in the other by a ſcrue.
C. The point of the Inſtrument looking out.
D. The ſpring which forces the Inſtrument.

## CHAP. XI.

### *Of feavers, and the cures of theſe feavers which accompany Phlegmons.*

The Feaver of a Phlegmon. What a Feaver is.

AMongſt the *Symptoms* which moſt uſually accompany Phlegmons, and afflict all the body of the patient, Feavers are the chief; that is, hot, and dry diſtempers kindled in the heart, and thence by the Artery is ſent over all the body; yet theſe which uſually follow this kind of Tumors are *Ephemeræ*, that is, Diary, unputrid *Synochi*; Of whoſe nature and order of cure I will here briefly relate what I have learnt from my Maſters; that is, Doctors of Phyſick, as I have been converſant with them in the practiſe of my Art.

What an *Ephemera*, or Diary is.

The *Ephemera*, or Diary [that is, of one day] is a hot and dry diſtemperature kindled in the vitall ſpirits. It hath that name, becauſe by its own nature it tarries not above the ſpace of one day or twenty four houres, by reaſon it is kindled in a ſubtile eaſily diſſipable matter.

The cauſes thereof.

The efficient cauſes of this Feaver are wearines, hunger, and drunkenneſs, anger, fury, ſorrow, watching, great & piercing cold, Aduſtion, Bathes, and manner of living inclining more to heat then ordinary, applying, uſing or drinking of acrid medicines, as Poyſons, or of hot meats, or drinks; to conclude, all the efficient cauſes common to all Feavers, putrefaction only excepted whch properly appertains to putrid feavers.

*Aphoriſm.* 55. *lib.* 4.

For a *Bubo* alſo, which is a *Phlegmon* of the Glandules, cauſes a Diary, as *Hippocrates* ſhews. All feavers proceeding from the Tumors of the Glandules are evill, the Diary excepted. Which *Aphoriſm* muſt be underſtood warily and with that diſtinction which *Galen* gives in his commentary, where he ſaith; It is only to be underſtood of Tumors riſing in the Glandules without occaſion, that is, without any evident and manifeſt cauſe; for otherwiſe Feavers that thence take their originall, though not Diary, yet are not all evill, as we learn by Buboes in Children, and the venereous Buboes, which happen without inflammation, or corruption of the liver; for ſuch commonly have no malign Feaver accompanying them, which thing is worthy a Chirurgeons obſervation.

The ſigns of a Diary.

The common ſigns of a Diary are, a moderate and vaporous heat feeling gentle to the hand, a pulſe ſwift and frequent, ſometimes great and ſtrong, as when the Diary is cauſed by anger; ſometimes little, if the Feaver proceed from ſorrow, hunger, cold, crudity; for other reſpects equall and ordinary.

The moſt certain ſigns are, if the Feaver come upon one not by little and little but ſodainly and that from ſome externall and evident cauſe, no loathing of meat, no cauſleſs wearineſs, no deep ſleep, yawning, great pain, reſtleſneſs, ſhaking nor cold going before, and laſtly, no other troubleſome ſymptome preceding. We here make no mention of the urine, becauſe moſt frequently they reſemble the urines of ſound bodies; for in ſo ſhort a time as Diaries endure, there cannot ſo great a perturbation be raiſed in the bloud that there may be ſignes thereof found in the urine. A Diary is ended in one fit, which by the proper nature of this Feaver laſts but one day, although ſometimes, otherwiſe it is extended to three, or four dayes ſpace; and then it eaſily degenerates into a Putrid, eſpecially any error of the Patient, Phyſitian, or thoſe which attend him concurring therewith, or if the externall things be not rightly fitted.

Why in a Diary the urines like to theſe in health.

The unputrid *Synochus*.

This Feaver is terminated either by inſenſible tranſpiration, or by the moiſture of the skin, or by a ſweat naturall, gentle, and not ill ſmelling; to this Diary we may refer the unputrid *Synochus* generated of bloud not putrid, but only heated beyond meaſure. For uſually there ariſes a great heat over all the body, by means of the bloud immoderately heated; whence the veins become more tumid, the face appears fiery, the Eyes red and burning, the breath hot, and to conclude, the whole habit of the body more full, by reaſon of that ebullition of the bloud, and the diffuſion of the vapours thence ariſing over all the body: Whence it is, that this kind of *Synochus* may be called, a vaporous Feaver. To this Children are incident as alſo all ſanguine bodies, which have no ill humors. The cure of this and the *Ephemera* or Diary is the ſame; becauſe it may ſcarſe ſeem different from the *Ephemera* in any other thing, than that it may be prolonged for three or four dayes. Wherefore whatſoever we ſhall ſay for the cure of the *Ephemera*, may be applyed to the *Synochus*, bloud-letting excepted, which in an unputrid *Synochus* is very neceſſary.

The cure of a Diary Feaver.

Now the cure of a Diary Feaver conſiſts in the decent uſe of things not natural, contrary to the cauſe of the diſeaſe; wherefore bathes of warm and naturall water are very profitable; ſo that the Patient be not Plethorick, nor fluxt with excrements, nor obnoxious to catarrhes and defluxions, becauſe a catarrh is eaſily cauſed and augmented by the humors diffuſed and diſſolved by the heat of a bath; therefore in this caſe we muſt eſchew frictions, and anointing with warm oil, which things notwithſtanding are thought very uſefull in theſe kinds of Feavers, eſpecially when they have their originall from extreme labour, by aſtriction of the skin or a *Bubo*. Let this be a generall rule, that to every cauſe, whence this Feaver proceeded, you oppoſe the contrary for a remedy; as to labour, reſt; to watching, ſleep; to anger and ſorrow, gratefull ſociety of friends, and all things repleniſhed

plenished with pleasant good will; and to a *Bubo*, the proper cure thereof.

Wine moderately tempered with water according to the custome of the sick patient, is good and profitable in all causes of this Feaver, except he be pained in his head, or that the Feaver drew its originall from anger, or a *Bubo*; for in this last case especially, the patient must abstain wholly from wine, untill the inflammation come to the state, and begins to decline. This kind of Feaver often troubles infants; and then you must prescribe such medicines to their Nurses, as if they were sick, that so by this means their milk may become medicinable. Also it will be good to put the Infant himself into a bath of naturall and warm water, and presently after the bath to anoint the ridge of the back and brest with oyl of Violets. But if a *Phlegmon* possess any inward part, or otherwise by its nature be great, or seated near any principall Bowel, so that it may continually send from it either a putrid matter or exhalation to the heart, and not only affect it by a quality or preternaturall heat by the continuity of the parts, thence will arise the putrid *Synochus*, if the blood by contagion putrefying in the greater vessels, consists of one equall mixture of the four humors. This Feaver is thus chiefly known, it hath no exacerbations, or remissions, but much less intermissions; it is extended beyond the space of twenty four houres, neither doth it then end in vomit, sweat, moisture, or by little and little by insensible transpiration; after the manner of intermitting Feavers, or Agues; but remains constant, untill it leaves the patient for altogether; it commonly happens not unless to these of a good temper and complexion, which abound with much bloud, and that tempered by an equall mixture of the four humors. It commonly indures not long, because the blood by some peculiar putrefaction degenerating into choler or Melancholy, will presently bring forth another kind of Feaver, to wit, a Tertian or continued Quartain.

The use of wine in a Diary.

How a putrid *Synochus* is caused.

The cure of this Feaver (as I have heard of most learned Physitians) chiefly consists in bloodletting. For by letting of blood the fulness is diminished, and therefore the obstruction is taken away, and lastly, the putrefaction. And seeing that in this kind of Feaver there is not only a fault of the matter, by the putrefaction of the blood, but also of the Temper by excess of heat; certainly Phlebotomy helps not only, as we said, the putrefaction, but also the hot distemper. For the blood in which all the heat of the creature is contained, whilst it is taken away, the acrid and fuliginous excrements exhale and vanish away with it, which kept in, encreased the Feaverish heat. Moreover, the veins, to shun emptiness, which nature abhors, are filled with much cold air in stead of the hot blood which was drawn away, which follows a cooling of the habit of the whole body; yea and many by means of Phlebotomy have their bellies loosed, and sweat, both which are much to be desired in this kind of Feaver.

Phlebotomy necessary in a putrid *Synochus*.

This moved the ancient Physitians, to write, that we must draw blood in this disease, even to the fainting of the Patient.

What benefit we may reap by drawing blood even to fainting.

Yet because thus, not a few have poured out their lives together with their blood, it will be better and safer to divide the evacuations, and draw so much blood at severall times, as the greatness of the disease shall require, and the strength of the Patient may bear.

When you have drawn blood, forthwith inject an emollient and refrigerative clyster; lest that the veins emptied by Phlebotomy may draw into them the impurity of the Guts; but these clysters which cool too much, rather bind the belly, than loose it. The following day the Morbifick matter must be partly evacuated by a gentle purge, as a bole of *Cassia*, or *Catholicon*; then must you appoint Syrups which have not only a refrigerative quality, but also to resist putrefaction, such as the Syrup of Lemmons, Berberries, of the Juice of Citrons, of Pomgranats, Sorrell and Vineger; let his diet be absolutely cooling and humecting, and also slender; for the native heat much debilitated by drawing of a great quantity of blood cannot equall a full diet. Therefore it shall suffice to feed the Patient with chicken and veal broths made with cooling herbs, as Sorrell, Lettuce, and Purslain. Let his drink be Barly water, Syrup of Violets mixed with some pretty quantity of boiled water, *Julepum Alexandrinum*, especially if he be troubled with scouring, or laske. But the Physitian must chiefly have regard to the fourth day, for if then there appear any signs of concoction in the excrements, the *Crisis* must be expected on the eveuth day, and that either by a loosness of the belly, or an aboundance of urine, by vomits, sweats, or bleeding. Therefore we must then do nothing but commit the whole business to nature.

Why we must give a clyster presently after blood letting.

What Syrups profitable in this case.

Why a slender Diet must be used after letting much blood.

But for drinking cold water, which is so much commended by *Galen* in this kind of Feaver, it is not to be suffered before there appear signs of concoction; moreover in the declining of the disease the use of wine will not be unprofitable to help forwards sweats.

When drinking of water is to be permitted in a putrid *Synochus*.

## CHAP. XII.

### *Of an* Eryſipelas, *or Inflammation.*

HAving declared the cure of a Phlegmon, cauſed by laudable blood, we muſt now treat of theſe tumors which acknowledg choler the materiall cauſe of their generation, by reaſon of that affinity which intercedes between Choler and Blood. Therefore the tumors cauſed by naturall Choler, are called *Eryſipelata*, or Inflammations; theſe contain a great heat in them, which chiefly poſſeſſes the skin, as alſo oftentimes ſome portion of the fleſh lying under it. For they are made by moſt thin and ſubtle blood (which upon any occaſion of inflammation eaſily becomes cholerick) or by blood and choler, hotter than is requiſit, and ſometimes of choler mixed with an acrid ſerous humor.

The definition of an *Eryſipelas.*

*Gal. Cap. 2. lib. 14. Meth. med. & 2. ad Glau.*

That which is made by ſincere and pure choler, is called by *Galen*, a true and perfect *Eryſipelas*. But there ariſe three differences of *Eryſipelaes* by the admixture of choler with the three other kinds of humors. For if it being predominant be mixed with blood, it ſhall be termed *Eryſipelas Phlegmonodes*; if with Phlegm, *Eryſipelas œdematodes*; if with Melancholy, *Eryſipelas Scirrhodes*. So that the former and ſubſtantive word ſhews the humor bearing dominion, but the latter or adjective that which is inferior in mixture. But if they concur in equall quantity, there will be thereupon made *Eryſipelas Phlegmone*; *Eryſipelas œdema*, *Eryſipelas ſcirrhus*.

Two kinds of *Eryſipelas.*

*Galen* acknowledges two kinds of *Eryſipelaes*, one ſimple and without an ulcer, the other ulcerated. For choler drawn & ſevered from the warmnes of the blood, running by its ſubtlety and acrimony unto the skin, ulcerates it; but reſtrained by the gentle heat of the blood, as a bridle, it is hindered from piercing to the top of the skin, and makes a tumor without an ulcer. But of unnaturall choler are cauſed many other kinds of cholerick tumors, as the *Herpes exedens*, and *Miliaris*, and laſtly, all ſorts of tumors which come between the *Herpes* and *Cancer*. You may know *Eryſipelaes* chiefly by three ſigns, as by their colour, which is a yellowiſh red; by their quick ſliding back into the body at the leaſt compreſſion of the skin (the cauſe of which is the ſubtlety of the humor and the outward ſite of it under the skin, whereupon by ſome an *Eryſipelas* is called a Diſeaſe of the skin;) Laſtly, by the number of the Symptoms, as heat, pulſation, pain. The heat of an *Eryſipelas* is far greater than that of a Phlegmon, but the pulſation is much les; for as the heat of the blood is not ſo great, as that of choler, ſo it far exceeds choler in quantity and thickneſs, which may cauſe compreſſion and obſtruction of the adjacent muſcle.

*Gal. lib. 2. ad Glauc.*

For Choler eaſily diſſipable by reaſon of its ſubtlety quickly vaniſhes, neither doth it ſuffer it ſelf to be long contained in the empty ſpaces between the muſcles; neither doth an *Eryſipelas* agree with a Phlegmon in the propriety of the pain. For that of an *Eryſipelas* is pricking and biting without tenſion, or heavineſs, yet the primitive, antecedent and conjunct cauſes are alike of both the tumors. Although an *Eryſipelas* may be incident to all parts, yet principally it aſſails the face, by reaſon of the rarity of the skin of that place, and the lightneſs of the cholerick humor flying upwards. It is ill when an *Eryſipelas* comes upon a wound, or ulcer, and although it may come to ſuppuration, yet it is not good; for it ſhews that there is obſtruction by the admixture of a groſs humor, whence there is ſome danger of eroſion in the parts next under the skin.

*Hip. Apho. 79. Sect. 7. Aph. 25. Sect. 16. Aph. 43. Sect. 3.*

It is good when an *Eryſipelas* comes from within outwards; but ill when from without it retires inward. But if an *Eryſipelas* poſſeſs the womb it is deadly, and in like manner if it ſpread too far over the face, by reaſon of the ſympathy of the membranes of the brain.

## CHAP. XIII.

### *Of the cure of an* Eryſipelas.

FOr the cure of an *Eryſipelas* we muſt procure two things, to wit, evacuation and refrigeration. But becauſe there is more need of cooling, than in a Phlegmon, the chief ſcope muſt be for refrigeration. Which being done, the contained matter muſt be taken away and evacuated with moderately reſolving medicines. We muſt do four things to attain unto theſe forementioned ends. Firſt of all we muſt appoint a convenient manner of Diet, in the uſe of the ſix things not naturall; that is, we muſt incraſſate, refrigerate and moiſten as much as the nature of the diſeaſe and patient will ſuffer, much more than in a Phlegmon; then we will evacuate the Antecedent matter, by opening a vein, and by medicines purging choler. And that by cutting the Cephalick vein, if there be a portion of the blood mixed with Choler, if the *Eryſipelas* poſſeſs the face, and if it be ſpread much over it.

*Gal. 14. Method.*

4 Things to be performed in cutting an *Eryſipelas.*

In what *Eryſipelas* it is convenient to let blood, in what not.

But if it ſhall invade another part, although it ſhall proceed of pure choler, Phlebotomy will

will not be ſo neceſſary, becauſe the bloud which is as a bridle to the choler being taken away, there may be danger, leſt it become more fierce; yet if the body be plethorick, it will be expedient to let bloud, becauſe this, as *Galen* teacheth, is oft times the cauſe of an *Eryſipelas*. It wil be expedient to give a clyſter of refrigerating and humecting things before you open a vein; but it belongs to a learned and prudent Phyſitian to preſcribe medicines, purging choler.

What topick medicines are fit to be uſed in the beginning of an *Eryſipelas*.

The third care muſt be taken for Topick, or locall medicines, which in the beginning and encreaſe muſt be cold and moiſt, without any either dryneſs or aſtriction, becauſe the more acrid matter by uſe of aſtringent things being driven in, would ulcerate and fret the adjacent particle.

*Galen* and *Avicen* much commend this kind of remedy; Take fair water ℥vi, of the ſharpeſt Vinegar ℥ i, make an Oxycrate, in which you may wet linnen clothes and apply to the affected part and the circumjacent places, and renew them often. Or ℞, *Succi ſolani, plantag. & ſempervivi, an.* ℥ ij, *aceti* ℥ ß, *Mucaginis ſem. Pſylii* ℥ ij, *ſucci hyoſcyami* ℥ i, *Miſce.* But if the *Eryſipelas* be upon the face, you muſt uſe the medicine following.

℞, *Vnguent. Ro.* ℥ iiij, *ſucci plantagin. & ſempervivi, an.* ℥ i, *trochiſc. de Camphora* ℥ ß, *aceti parum*; let them be mixed together and make a liniment. But if the heat and pain be intolerable, we muſt come to narcotick medicines. As ℞, *ſucci hyoſcyami, ſolani, cicutæ, an.* ℥ i, *album. ovorum n.* ii, *aceti* ℥ ß, *opii & Camphor. an. gra.* 4, *croci* ϑ ß, *Mucaginis ſem. pſyll. & fænigr. extractæ in aq. roſ. & plantag. an.* ℥ i, *ol. de papav.* ℥ ij. *fiat linimentum, addendo ung. refrigerantis Gal. camphor. q. ſatis ſit.* Yet we muſt not uſe ſuch like medicines too long, leſt they cauſe an extinction of the native heat and mortification of the part.

What caution muſt be had in the uſe of narcotick medicines.

Wherefore ſuch Narcotick medicines muſt be uſed with regard of place, time and ſuch other circumſtances. Therefore we may three manner of wayes underſtand when to deſiſt from uſing Narcotick or ſtupefactive medicines. The firſt is when the Patient in the affected part feels not ſo much heat, pricking and pain, as before; The ſecond is when the part feels more gentle to the touch than before; The third when the fiery and pallid colour begins by little and little to waxe livid and black; for then muſt we abſtain from Narcotick, and uſe reſolving and ſtrengthening things, whereby the part may be revived and ſtrengthened by recalling the Native heat; As ℞, *Farinæ hordei & Orobi, an.* ℥ ij, *farinæ ſem. lini* ℥ i ß, *coquantur in Hydromelite vel oxycrato, addendo pulv. roſarum & chamæmel. an* ℥ ß, *ol. anethi & chamæm. an.* ℥ i, *fiat cataplaſma.* Or you may uſe this following fomentation, ℞, *Rad. Altheæ* ℥ ij, *fol. malvæ, biſmal. pariet. abſinthii, ſalviæ, an. m.* i, *flor. chamæm. meliloti, roſar. rub. an. m.* ij, *coquantur in æquis partibus vini & aquæ, & fiat fotus cum ſpongia.* After the fomentation you may apply an Emplaiſter of *Diachylon Ireatum*, or *Diapalma* diſſolved in oil of chamomile and Melilote, and ſuch other like. The fourth Intention which is of the correction of accidents, we will perform by theſe means which we mentioned in curing a Phlegmon, by varying the medicaments, according to the judgment of him which undertakes the cure.

Reſolving and ſtrengthening medicines.

## CHAP. XIIII.

*Of the* Herpes; *that is, Teaters, or Ringwormes, or ſuch like.*

What a *Herpes* is, what be the kinds thereof. *Gal. 2. ad Glauconem.*

*Herpes* is a tumor cauſed by pure choler ſeparated from the reſt of the humors, that is carryed by its naturall lightneſs and tenuity even to the outer or ſcarſe skin, and is diffuſed over the ſurface hereof. *Galen* makes three ſorts of this tumor. For if perfect choler of an indifferent ſubſtance, that is, not very thick, cauſe this tumor, then the ſimple *Herpes* is generated, obtaining the name of the *Genus*; but if the humor be not ſo thin, but compounded with ſome ſmall mixture of Phlegm, it will raiſe little bliſters over the skin like to the ſeeds of Millet, whence it was that the Ancients called this Tumor the *Herpes Miliaris*. But if it have any admixture of Melancholy, it will be an *Herpes exedens*, terrible by reaſon of the eroſion or eating into the skin and muſcles lying under it.

What the *Herpes miliaris* is.

What the *exedens*.

Three intentions in curing *Herpes*.

Theſe are abſolutely three intentions of curing; The firſt is to appoint a Diet juſt like that we mentioned in the cure of an *Eryſipelas*; The ſecond is to evacuate the antecedent cauſe, by medicines purging the peccant humor, for which purpoſe oft-times clyſters will ſuffice, eſpecially if the patient be ſomewhat eaſie by nature, and if the urine flow according to your deſire; for by this a great part of the humor may be carryed into the bladder; The third ſhall be to take away the conjunct cauſe by locall medicines ordained for the ſwelling and ulcer: Therefore the Chirurgeon ſhall have regard to two things, that is, the reſolving of the tumor, and the drying up of the ulcer; for every ulcer requires drying, which can never be attained unto, unleſs the ſwelling be taken away. Therefore becauſe the chiefeſt care muſt be to take away the Tumor, which unleſs it be performed there can be no hope to heal the ulcer, he ſhall lay this kind of medicine to diſſolve and dry, as ℞ *Ceruſæ & tuthiæ præpar. an.* ℥ i, *ol. roſ. & adipis capon. an.* ℥ ij, *corticis pini uſti, & loci,* ℥ ß, *ceræ quantum ſatis, fiat unguentum.* Or ℞, *Farin. hordei & lent. an.* ℥ ij, *coquantur in decocto corticis*

A rule for healing ulcers conjoyned with tumors.

*mali granati, balauſt. plantag. addendo pulveris roſar. rub. abſinth. an.* ℥ ß, *olei Myrtillor. & mellis com. an.* ℥ vi, *fiat unguentum, ut artis eſt.* But for an *Herpes Miliaris* theſe muſt chiefly be uſed, ℞, *pulv. gallarum, malicurii, balauſt. boli armeni an.* ℥ i, *aquæ roſ.* ℥ iij, *aceti acerrimi* ℥ i, *axungiæ anſer. & olei Myrtillor. an.* ℥ i ß, *terebinth.* ℥ i, *fiat unguentum ad ujum.* I have often found moſt certain help in *unguentum cnulatum cum Mercurio*, for it kills the puſtules, and partly waſts the humor contained in them. Yet if the ulcer, not yet neither yeelds, but every day diffuſes it ſelf further and further, you ſhall touch the edges and lips thereof with ſome acrid medicine, as *Aqua fortis*, oyl of Vitriole, or ſuch like, for by this kind of remedy, I have oft times healed fretting ulcers, which ſeemed altogether incurable.

The force of *Unguentum cnulatum cum Mercurio.*

Medicines fit for reſtraining eating and ſpreading ulcers.

## CHAP. XV.

### *Of Feavers, which happen upon Eryſipelous Tumors.*

A vulgar deſcription of an intermitting Tertian feaver.

AS Feavers ſometimes happen upon Inflammations, and Eryſipelaes, which favour of the humor whereof they proceed, that is, Choler. Therefore ſeeing it is peculiar to Choler, to move every third day, it is no marvail if great Inflammations bring with them Tertian Feavers, or Agues, which have their fit every third day; for it is called an Intermitting Tertian which comes every other day.

The cauſes of Tertian feavers.

The Primitive cauſes, in generall are ſtrong exerciſes, eſpecially in the hot Sun, the uſe of heating, and drying either meats or medicines, great abſtinence joyned with great labour, care, ſorrow; the antecedent cauſes are the plenty of choler in the body, an hot and dry diſtemperature either of the whole body, or of the liver only: the conjunct cauſe is the putrefaction of the cholerick humor lying in ſome plenty without the greater veſſels, in the habit of the body.

The ſigns of an intermitting Tertian.

The ſigns, a ſhaking or ſhivering like as when we have made water in a cold winter morning, a great pricking, ſtretching, or ſtiffneſs, as if there were pins thruſt into us over all our bodies, by reaſon of the acrimony of the cholerick humor driven uncertainly and violently over all the body, and the ſenſible membranous and nervous particles at the beginning of the fit; then preſently the heat becomes acrid, the Feaver kindled, like a fire in dry ſtraw; the pulſe is great, quick and equal; the tongue dry; the urine yellowiſh, red and thin. The Symptomes

The Symptomes are watchings, thirſt, talking idlely, anger, diſquietneſs and toſſing the body at the leaſt noiſe or whiſpering. Theſe Feavers are terminated by great ſweats. They are incident to cholerick young men, ſuch as are lean, and in Summer; after the fit oft times follow cholerick vomiting and yellowiſh ſtools. After the fit there follows an abſolute intermiſſion retaining no reliques of the Feaver, untill the approach of the following fit, becauſe all the cholerick matter by the force of that fit and nature is eaſily caſt out of the body, by reaſon of its naturall levity and facility; whereas in Quotidians there is no ſuch thing, as which after the fit alwayes leave in the body a ſenſe and feeling of a certain inequality by reaſon of the ſtubborneſs of the Phlegmatick humor, and dulnes to motion. The fit commonly uſes to endure 4, 5, or 6 houres, although at ſome time it may be extended to 8 or 10. This Feaver is ended at 7 fits, and uſually is not dangerous, unleſs there be ſome error committed by the Phyſitian, Patient, or ſuch as attend him. Tertians in ſummer are ſhorter, in winter longer.

Why Tertians have an abſolute ceſſation of the feaver at the end of each fit.

Wherefore the beginning of the fit is accompanied with ſtifneſs, or ſtretching, the ſtate with ſweat, whereupon if the noſe, lips or mouth break forth into pimples or ſcabs, it is a ſign of the end of the Feaver, and of the power of nature which is able to drive the conjunct cauſe of the diſeaſe from the center to the habit of the body; yet theſe pimples appear not in the declining of all Tertians, but only then, when the cholerick humor cauſing the Feaver ſhall reſide in the ſtomach, or is driven thither from ſome other part of the firſt region of the Liver. For hence the ſubtler portion thereof carryed by the continuation of the inner coat to the mouth and noſe, by its acrimony eaſily cauſes pimples in theſe places. The cure is performed by Diet, and Pharmacy.

The diet of ſuch as have a Tertian.

Therefore let the Diet be ſo ordered for the ſix things not naturall, that it may incline to refrigeration and humection, as much as the digeſtive faculty will permit, as Lettuce, Sorrel, Gourds, Cowcumbers, Mallows, Barly Creams, Wine much allaid with water, thin, ſmall, and that ſparingly and not before ſigns of concoction ſhall appear in the urine; for at the beginning he may not uſe wine, nor in the declining, bnt with theſe conditions, which we have preſcribed.

When ſuch as have a tertian may uſe wine.

The time of feeding the patient.

But for the time of feeding the patient, on that day the fit is expected, he muſt eat nothing for three houres before the fit, leſt the aguiſh heat lighting on ſuch meats as yet crude, may corrupt and putrefie them; whence the matter of the Feaver may be increaſed, (becauſe it is as proper to that heat to corrupt all things, as to the native to preſerve and vindicate from putrefaction) the fit lengthened, and nature called away from the concoction and excretion of the Morbifick humor; yet we may temper the ſeverity of this law by having regard to the ſtrength of the patient; for it will be convenient to feed a weak patient not only before the fit, but alſo in the fit it ſelf, but that only ſparingly, leſt the ſtrength ſhould be too much impaired.

Now

Now for Pharmacy; It muſt be conſidered, whether the ſtrength of the Patient be ſufficient, if the humors abound; for then you may preſcribe *Diaprunum ſimplex*, *Caſsia* newly extracted, the decoction of Violets, of Citrin Myrobalanes; Syrups of Violets, Roſes, of Pomegranats and Vineger. But if the powers of the Patient languiſh, he muſt not only not be purged, but alſo muſt not draw blood too plenteouſly, becauſe Cholerick men ſoon faint, by reaſon of the facile and eaſie diſſipation of the ſubtle humors and ſpirits; beſides ſuch as are ſubject to tertian Feavers do not commonly abound with blood, unleſs it be with Cholerick bloud, which muſt rather be rentied, or amended by cooling and humecting things, than evacuated. Yea verily, when it is both commodious and neceſſary to evacuate the body, it may bee attempted with far more ſafety by ſuch things as work by inſenſible tranſpiration, which provoke ſweats, vomit or urine by reaſon of the ſubtlety of the Cholerick humor, than by any other. Alſo the frequent uſe of emollient glyſters made with a decoction of Prunes, Jujubes, Violets, Bran and Barley, will profit much. If the Patient fall into a *Delirium* or talk idlely by reaſon of the heat and dryneſs of the head, with a particular exceſs of the cholerick humor, the Head muſt be cooled by applying to the Temples and Forehead and putting into the Noſe oyl of Violets, Roſes, or womans milk. Let the feet and legs be bathed in fair and warm water, and the ſoles of the feet be anointed with oyl of Violets and ſuch like.

When to purge the patient.

In the declining, a Bath made of the branches of Vines, the leaves of Willowes, Lettuce and other refrigerating things boiled in fair water, may be profitably uſed three houres after meat eaten ſparingly.

But I would have you ſo to underſtand the Declination or declining not of one particular fit, but of the diſeaſe in generall, that the humors already concocted, allured to the skin by the warmneſs of the bath, may more eaſily and readily breath forth: he which otherwiſe ordains a bath at the beginning of the diſeaſe, will cauſe a conſtipation in the skin and habit of the body, by drawing thither the humors peradventure tough and groſs, no evacuation going before.

When the time is fit to uſe a Bath.

Alſo it will be good after generall purgations to cauſe ſweat by drinking White wine thin and well tempered with water; but urine by a decoction of Smallage and Dill; Certainly ſweat is very laudable in every putrid Feaver, becauſe it evacuates the conjunct matter of the diſeaſe, but chiefly in a Tertian, by reaſon that choler by its inbred levity eaſily takes that way, and by its ſubtilty is eaſily reſolved into ſweat. But that the ſweat may be laudable it is fit it be upon a criticall day, and be foreſhewed by ſigns of concoction agreeable to the time and manner of the diſeaſe. Sweats when as they flow more ſlowly are forwarded by things taken inwardly and applied outwardly; by things taken inwardly, as with white wine, with a decoction of Figs, Raiſins ſtoned, graſſe roots and the like opening things; but by things outwardly applied, and ſpunges dipped in a decoction of hot herbs (as Roſmary, Time, Lavander, Marjerom and the like) applied to the Groins, Armholes, and ridge of the back.

What kinds of evacuations are moſt fit in a Tertian.

Sudorificks.

You may for the ſame purpoſe, fill two Swines bladders with the ſame decoction, or elſe ſtone bottles, and put them to the feet, ſides, and between the thighes. Then let this be the bound of ſweating, when the Patient begins to waxe cold; that is, when the ſweat feels no more hot, but cold.

But by the conſent of all, bloud muſt not be letten after the third fit, but preſently at the beginning of the Feaver, according to the opinion and preſcription of *Galen*; for ſeeing this Feaver for the moſt part is terminated at ſeven fits, if you ſtay untill the third fit bee paſt, the Feaverwill now be come to its ſtate; but *Hippocrates* forbids us to move any thing in the ſtate, leſt nature then buſied in concocting the diſeaſe, be called from its begun enterpriſe.

When blood muſt be let.

*Aphor. 29. Sect. 2.*

## CHAP. XVI.

### *Of an* Oedema *or cold Phlegmatick Tumor.*

Hitherto we have treated of hot Tumors, now we muſt ſpeak of cold; Cold Tumors are only two, an *Oedema* and a *Scirrhus*; And for all that *Hippocrates* and the Ancients uſed the word *Oedema* for all ſorts of Tumor, in generall; yet by *Galen* and theſe Phyſitians, which ſucceeded him, it hath been drawn from that large and general ſignification, to a more ſtrait and ſpeciall, only to deſign a certain *ſpecies*, or kind of Tumor.

*Gal. lib. de tumor. præter natur.*

Wherefore an *Oedema* is a ſoft, laxe and painleſſe Tumor, cauſed by collection of a Phlegmatick humor.

What an *Oedema* is.

The Ancients made eight differences of Tumors proceeding of Phlegm: The firſt they termed a true and lawfull *Oedema* proceeding from naturall Phlegm; from unnaturall phlegm by admixtion of another humor they would have three ſorts of Tumors to ariſe, as

The differences of *Oedema*.

that by mixture of blood, ſhould be made an *Oedema Phlegmonode s*, and ſo of the reſt.

Beſides, when they perceived unnaturall Phlegm either puffed up by flatulency, or to flow with a wateriſh moiſture, they called ſome *Oedemaes* flatulent, others wateriſh; but alſo when they ſaw this ſame Phlegm often to turn into a certain Plaiſter-like ſubſtance, they thought that hence proceeded another kind of *Oedema*, which they expreſſed one while by the name of *Atheroma*, another while by *Steatoma*, and ſometimes by *Melicerides*, as laſtly, they called that kind of *Oedema* which is cauſed by putrid and corrupt flegm, *Scrophule*. For we muſt obſerve that Phlegm ſometimes is naturall, and offends only in quantity, whence the true *Oedema* proceeds; otherwhiles it is not naturall; and it becomes not naturall, either by admixtion of a ſtrange ſubſtance, as bloud, Choler or Melancholy, whence ariſe the three kinds of *Oedema's* noted formerly by the way; or by the putridneſs and corruptions of its proper ſubſtance, whence the *Strumæ* and *Scrophulæ* proceed; or by concretion, whence kernels and all kinds of Wens, *Ganglia* and knots; or by reſolution, whence all flatulent and wateriſh Tumors, as the *Hydrocele*, *Pneumatocele* and all kinds of Dropſies.

By how many waies Phlegm becomes not naturall.

The Cauſes.

The cauſes of all *Oedema's* are the defluxion of a Phlegmatick or flatulent humor into any part, or the congeſtion of the ſame made by little and little in any part, by reaſon of the imbecillity thereof in concocting the nouriſhment, and expelling the excrement.

The ſigns.

The ſigns are a colour whitiſh and like unto the skin, a ſoft Tumor, rare and laxe by reaſon of the plentifull moiſture with which it abounds, and without pain, by reaſon this humor infers no ſenſe of heat nor manifeſt cold; when you preſs it with your finger the print thereof remains, becauſe of the groſneſs of the humor and ſlowneſs to motion.

The prognoſticks.

*Oedema's* breed rather in winter than in ſummer, becauſe winter is fitter to heap up Phlegm; they chiefly poſſeſs the Nervous and Glandulous parts, becauſe they are bloudleſs, and ſo cold and more fit by reaſon of their looſneſs to receive a defluxion; for the ſame cauſe bodies full of ill humors, ancient, and not exerciſed, are chiefly troubled with this kind of Tumor.

How *Oedema's* are terminated.

An *Oedema* is terminated ſometimes by reſolution, but oftner by concretion, ſeldomer by ſuppuration, by reaſon of the ſmall quantity of heat in that humor.

A Symptomaticall *Oedema*, as that which follows upon a Dropſie or Conſumption, admits no cure unleſs the diſeaſe be firſt taken away.

The intentions of curing *Oedema's*.

The generall cure is placed in two things, that is, in evacuation of the conjunct matter prohibiting the generation of the antecedent. We attaine to both chiefly by four means.

The diet.

The firſt truly by ordaining a fit manner of living and preſcribing moderation in the uſe of the ſix things not naturall. Wherefore we muſt make choiſe of ſuch air as is hot, dry and ſubtile; we muſt preſcribe wine of a middle nature for his drink; let the bread be well baked; let meats be appointed which may generate good bloud, and theſe rather roſted than boyled. Let all fruits be forbidden, as alſo broths and milk-meats; let him eat ſuch fiſh as are taken in ſtony rivers; the Patient ſhall obſerve mediocrity in feeding, but principally ſobriety in drinking, for fear of crudities; after meat let him uſe digeſtive powders, or common drige powder; if his belly be not naturally looſe, let it be made ſo by art.

Exerciſe.

Let the Patient uſe exerciſe before meat, ſo by little and little to ſpend this humor, and reſtore the native heat. Let him ſleep little, becauſe much ſleep breedeth cold humors; let him avoid grief and ſadneſs. And if he be of a weak body, let him abſtain from venery, leſt by another weakning by the uſe of venery added to his preſent infirmity, he fall into an uncurable coldneſs, from whence a greater meaſure of crudity will ariſe. Otherwiſe, if the body be ſtrong and luſty, by ſuch exerciſes and the moderate uſe of venery it will be the more dryed and heated.

What to be obſerved in the uſe of venery. *6. Epid. ſect. 5. ſen. 23.*

For ſo that ſentence of *Hippocrates* is to be underſtood; That venery is a cure for Phlegmatick diſeaſes, as *Galen* in his commentaries tels us. The Phyſitian may perform the ſecond intention by turning his counſell to that part, from whence the ſpring of this Phlegmatick humor flows. For if the infirmity ariſe from the ſtomach, or from any other part, the part from whence it comes muſt be ſtrengthened; if from the whole habit of the body, let attenuating, penetrating and opening medicines be preſcribed. We perform the third intention by evacuating the humor impact in the part with locall medicines varied according to the four times of the Tumor.

*Lib. 2 ad Glauc. cap. 3.* A rowler.

For *Galen* in the beginning and encreaſe preſcribeth a fomentation of *Oxycratum* uſed with a ſpunge. But if ſo be that the *Oedema* be upon the Arm or Leg, a repelling rowler is very good, that is, ſuch an one as is brought from below upwards. So theſe medicines following are very fit for the ſame purpoſe, ℞, *Lixivii ex cineribus ſarmentorum, & caulium, an.* ℥ iiij, *Tartari & Aluminis an.* ℥ ß, *aceti* ℥ ij, mixe all together and make a decoction, wherein wet ſponges and foment the place. Alſo you may uſe the following Cataplaſm, ℞, *farinæ hordei* ℥ iiij, *coquantur in Lixivio communi, addendo pulveris nucis cupreſſi, corticum granatorum, balauſti. an.* ℥ i, *Myrrhæ, Aloes, alum. an.* ℥ ß, *olei Myrtill.* ℥ ij, *fiat Cataplaſma.* In the ſtate and declination you muſt uſe drying and reſolving medicines, as ℞, *Nucum cupreſſi, granat. ſumach. balauſti, an.* ℥ i, *Salviæ, origan. calament. Hyſſopi, meliſſæ an. m.* i, *abſinthii, plantag. caud æ equ. tapſi. barb. centinod. an. m. ſſ. alum. tartar. & ſalis com. an.* ℥ i, *coquantur cum lixivio*; foment it with a ſpunge, then preſently apply this following Cataplaſm. ℞, *Rad. Brioniæ*

*Brioniæ* ℥ ij, *abſinth. plantag. centin. chamæm. meliloti, peleg. an. m. ſſ. coquantur in hydromelite, piſtentur, trajiciantur, addendo pulveris roſ. rub. chamem. melil. an* ℥ i, *fiat Cataplaſma.*

Laſtly, you may here with good ſucceſs uſe reſolving emplaiſters and ointments, firſt, heating or chafing the part by friction or ſomentations, as well moiſt as dry; otherwiſe emplaiſters will ſcarſly do their duty, by reaſon of the great coldneſs of the part, being not ſufficient of it ſelf to aſſimilate the nouriſhment, or to expell the ſuperfluous and unprofitable humor. Let a fomentation be made with white Wine, in which Sage, Roſemary, Time, Lavander, Chamomile and Melilote flowers, red Roſes, Orris roots, *Stæchas* and ſuch like have been boyled, with a little Vinegar added thereunto. Quench hot bricks in the ſame decoction, and apply them wrapped in linnen clothes to the affected part, for ſo a vapour will breath forth which hath an attenuating, piercing, reſolving and ſtrengthening faculty. But you may in ſtead of the bricks fitly apply Hogs or Oxe bladders, filled half full with the foreſaid decoction, and that hot. The frictions muſt be made of hot linnen clothes, for ſo the native heat together with the bloud and ſpirits is recalled to the part, and fuliginous humors contained under the skin are reſolved, whereby the ſtrength of the part is in ſome part recovered.

What caution to be had in application of Emplaiſters.

## CHAP. XVII.

### *Of the cure of flatulent and wateriſh Tumors.*

I Formerly declared that not only flatulent and wateriſh Tumors were comprehended under this word *Oedema*, but alſo ſuch as are bred of congealed Phlegm, as *Atheromata, Steatomata* and *Melicerides*. Flatulent or windy Tumors are cauſed by vapour and wind kept in or contained ſometimes under the skin, ſomewhiles under the membranes, as the *Perioſteum* and *Pericranium*, whereupon inſues cruell torment by reaſon of the diſtention of theſe parts which are endued with moſt exquiſite ſenſe. Sometimes the Entrails, as the ſtomach and Guts are ſwollen and ſtretched out with wind, as in a Tympany.

In what places flatulencies may be gathered.

They in this differ from a true and ligitimate *Oedema*, that when you lay your finger upon them and take it off again, there remains no ſign of the preſſure thereof, becauſe they are diſtent by vapour and not by humor, for the vapour being preſſed returns ſpeedily again, as you may perceive by balls or bladders filled with wind.

In what flatulent tumors differ from a true *Oedema*.

The cauſe of ſuch Tumors is the weakneſs of the native heat, not being able eaſily to reſolve and waſte the Phlegm by which the windy Tumors are raiſed, for ſo the morning Sun (which in ſome ſort reſembles our native heat) cannot reſolve the miſts diſperſed in the air; which at noon it eaſily reſolves into pure air. Alſo after the ſame manner our weaker heat ſtirs up vapours from that Phlegm it could not diſſolve, which vapours are the matter of inflamations, or ſwellings. But oft times although the native heat be ſufficiently powerfull, yet becauſe the humor lyeth deep, or is kept by the thickneſs of ſome membrane, tendon or Ligament, the ſtirred up vapour cannot exhale, whereby it comes to paſs, that encreaſed by little and little it cauſes a Tumor.

The cauſes of flatulent Tumors.

The ſigns of ſuch a Tumor are a certain renitency or reſiſtance perceived by preſſing it with your finger, and ſometimes a noiſe as if you ſmite upon a drum, eſpecially if much wind be contained therein, ſuch as are often gathered together in the hollowneſs of the belly, and in the ſpaces between the larger muſcles. The Tumor is neither red nor hot, but rather cold and white as in an *Oedema*. It often poſſeſſeth the joints, and eſpecially the knees, and it is very difficult to be reſolved. If ſuch flatulency be gathered together in the Guts, it cauſeth the wind Colick, in which ſometimes the diſtention is ſo great that death enſues by reaſon of the renting or tearing the coats of the Guts.

The ſigns of ſuch Tumors.

## CHAP. XVIII.

### *Of the cure of a flatulent and wateriſh Tumor.*

WE ſhall chiefly and principally cure flatulent and wateriſh tumors by three means. Firſt, by the ſame diet which we preſcribed in an *Oedema*; then by ſtrengthening the parts appointed for concoction, as the ſtomach and Liver, chiefly by the temperate uſe of Aromatick things, as *Diacuminum, Diacalamentha, Aromaticum, Caryophyllatum, Aromaticum Roſatum*, and the like, to be preſcribed according to good liking of the Phyſitian which overſees the cure; laſtly, by taking away of the conjunct matter by hot, drying and attenuating medicines which they call Carminative, that ſo the part being rarified the humor and flatulency therein contained may be diſcuſſed and diſſipated. But remedies of this nature muſt be varied according to the variety of the parts; for ſome things are fit to be applyed to the ſtomach, others to the Guts, others to the joints, and others to the fleſhy parts; for the Colick you muſt inject carminative glyſters, let reſolving *Sacculi* or Bags be applied, and cupping-glaſſes faſtened to the Navel; if an outward part be affected

Diet.
Things ſtrengthning the parts.
Medicines evacuating the conjunct matter.

affected,we uſe fomentations,liniments,chiefly if pain torment; as alſo Cataplaſmes and Emplaiſters,as ℞ *Florum chamæm.melil. roriſmarini, roſar. rub. an. p.j.abſinthii ji. hyſſopi,an.m.* let them be boiled in Lye,adding a little vineger for a fomentation to be uſed with ſponges.

*Galens* fomentation.

*Galen* foments the part with Roſe-vinegar and a little ſalt put thereto, and would have a ſponge dipped therein to lye ſomewhat long upon the part. ℞ *Olei chamæm. aneth. rut. & liliorum, an.* ℥ß, *ceræ albæ* ℥ vj. *aq. vitæ* ℥j, let them all be mixed together and make a liniment,with which anoint the part after the fomentation. ℞ *Farinæ fabar. orobi, an.* ℥iij, *coquanutur in decocto pulegii, origani, calamenth. ſalviæ, addita pulverum chamæm. & melilot.an. m.* ß, *furfur. farinæ fab. & orobi, an.* ℥ij, *coquantur cum lixivio communi, addendo terebinth.* ℥iij, *oleor. aneth. & rut. an.* ℥ij.make an emplaiſter for the foreſaid uſe.

The emplaiſter of *Vigo* with Mercury,and without,is very good for the ſame purpoſe. But you muſt note, that ſuch medicines muſt be applied to the part actually hot, and the ſame heat muſt be contained and renewed by putting about it linnen clothes, bricks, bottles and ſuch like hot things.

Corroborating medicines.

The Humor and flatulency which were kept ſhut up in the part being reſolved, the part muſt be ſtrengthned,leſt now and then it receive or generate the like matter. That may be done by the following fomentation and cataplaſme.℞ *Nucum cupreſſi, corticum granat. ſumach. berberis, balauſt. an.* ℥j.*caudæ equin.arnoglos.tupſi barb. abſinth.ſalviæ, roriſm.lavendul. an. m.ſſ. flor. chamæm. melil.roſar. anthos, an.p.* j. *alum. ſalis com. an.* ℥j, *bulliant omnia in æquis partibus aquæ fabrorum & vini auſteri,*make bags for a fomentation, or uſe the decoction for the ſame purpoſe with a ſponge.℞ *Farinæ fab. hordei & lupin. an.*℥ij.*terebinth. com.* ℥iiij. *pulver.radicis ireos, maſtic. an.* ℥ß, *mellis com.* ℥ijß, of the foreſaid decoction as much as ſhall ſuffice,ſo to make a cataplaſme to the form of a poultis liquid enough, let it be applied hot to the affected part having uſed the fomentation before.

The ſigns of a wateriſh tumor.

The ſigns of a wateriſh tumor are the ſame as of a flatulent;but over and beſides it ſhines, and at the preſſing with your fingers, there is heard a noiſe or murmur as of a bladder half filled with water.

Why a wateriſh tumor muſt be opened with an inſtrument.

Therfore the wateriſh tumor if it ſhal not yeeld to the forementioned reſolving medicines, the way muſt be opened with an inciſion knife, after the ſame manner, as we mentioned in a Phlegmon. For oftentimes this kind of remedy muſt be neceſſarily uſed,not only by reaſon of the contumacie of the humor which gives no place to the reſolving medicines, but alſo becauſe it is ſhut up in its proper ciſt or bag, the thickneſſe of which fruſtrates the force of the reſolving medicines, neither ſuffers it to penetrate into the humor. As I ſome years agoe found by experience in a maid of 7 years old;which troubled with a *Hydrocele* or wateriſh rupture,to whom when I had raſhly applyed to diſſolve it reſolving medicines of all ſorts,at length I was forc't to open it with my knife;not only to evacuate the contained matter,but alſo that I might pluck out the bag, which unleſſe it were cut up by the root, would be a mean to cauſe a relapſe. *John Altine* Doctor of Phyſick called me to this buſineſſe. *James Guilemeau* the Kings Chirurgeon overſaw the cure.

A Hiſtory.

## CHAP. XIX.

### *Of an Atheroma, Steatoma, and Meliceris.*

In what an *Atheroma, Steatoma,* and *Meliceris* differ.

ALthough theſe tumors may be thought comprehended under one *genus* with other *Oedematous* tumors, yet they differ as thus;that is, their matter is ſhut up in its bladder or bag, as it were in a peculiar cell. But their difference amongſt themſelves is thus; the matter of the *Steatoma*,as the name ſignifieth, is like unto Tallow [ for στέαρ in Greek ſignifieth Tallow,or ſeam] yet it oft-times is found ſtuffed with other divers hard bodies,ſtony, bony or callous like unto the claws of an hen.For *Philoxenus* reports that he ſometimes ſaw flyes in a *Steatoma* at the opening thereof,and ſuch other like things wholly diſſenting from the common matter of Tumors. The matter contained in an *Atheroma* is like to pap,with which they feed little Children.A *Meliceris* contains matter reſembling honey in colour and conſiſtence; theſe tumors appear and riſe without any inflamation going before them.Thus you ſhal know theſe tumors;a *Steatoma* is harder than the other two, neither yeelds it to the preſſure of your finger,but when it once yeelds, it doth not ſpeedily and eaſily return to its former figure,becauſe the matter is more groſs; it is of the ſame colour as the skin, without pain,and of a longiſh figure.The *Meliceris* yeelds to the touch, as being a looſe and ſoft body, and as it is eaſily diſpoſed and diffuſed,ſo it quickly returns to its former place and tumor. It differs from the *Atheroma* in figure and ſubſtance. For it is more globous and of a ſubtiler and more ſhining matter, beſides alſo it takes up a large ſpace, and is more obſequious to the touch, and for the reſt, without pain. As for the manuall operation of the Chirurgeon in their cure, it ſeems to be of no great conſequence of what ſort the matter is,whether reſembling tallow, honey, or pap, for there is one ſimple manner of operation, which is, that you pluck away the contained humor, as alſo the receptacle in which it is contained. Yet you muſt note ſuch tumors, ſometimes as it were hanging in the ſurface of the skin, are eaſily to be moved this way,

Of Chirurgery to be uſed to theſe tumors.

and

and that way; but otherſome again deeper faſtned firmly cohere with the adjacent bodies, and theſe require an exquiſit hand and alſo induſtry for fear of a great flux of blood and convulſion by cutting a vein. There are many other kinds of tumors, as the *Teſtudo* or Mole, the *Nata*, the *Glandula*, *Nodus*, *Botium*, *Lupia*, which as in matter (for they are all of a thick, clammy and viſcous Phlegmatick humor) ſo alſo in kind they agree with an *Atheroma*, *Steatoma*, and *Meliceris*. But alſo in theſe for the moſt part, when they are opened, you may ſee bodies of all ſorts far different from the common matter of tumors, as ſtones, chalk, ſand, coals, ſnails, ſtraws; or awneſs of corn, hey, horn, hairs, fleſh both hard and ſpongeous, griſtles, bones, whole creatures as well living as dead.

What the cauſe may be, that we ſometimes find *infecta* in theſe Tumors.

The generation of which things (by the corruption and alteration of humors) ſhall not make us much to admire it, if we conſider, that as nature of all the ſeeds and elements of the whole great world, hath made man the Microcoſme or little world, that he might be, as it were, the lively Image of that greater world; ſo in him, it being never idle in us, would have all the kinds of all motions and actions to ſhew themſelves, as long as matter for generation is not wanting. But becauſe there is little, or rather no mention of theſe tumors amongſt the ancients, we will briefly ſhew the opinions of the later writers concerning them.

Now they ſay, the *Teſtudo* is a tumor contrary to nature, ſoft, diffuſed, or vaulted, or arched like a Tortois, ſometimes it ariſes in the head in form of a Mole, and then it is called a Mole.

What the *Teſtudo*, or *Talpa-ria* is.

The *Nata* is a great and fleſhy tumor, not in ſhape unlike a Melon, or rather the fleſh of a mans buttocks, whence it may ſeem to have had the name, unleſs we had rather ſay it had it, becauſe it more uſually breeds upon the buttocks, than upon any other part of the body.

What the *Nata* is.

The *Glandula* takes its denomination from an Acorn, called *Glans* in Latine, the which it ſomewhat reſembles in the compaſſe and form of the tumor; or elſe becauſe it moſt commonly breeds in the Glandules, or Emunctories of mans body.

What a *Glandula*.

The *Nodus* or knot, is a round tumor, hard and immoveable, named from a rope tied on a knot.

What *Nodus*.

*Guido Cauliacenſis* affirms knots commonly to grow in nervous bodies; but at this time they more uſually ariſe on the bones of ſuch as have the French diſeaſe.

## CHAP. XX.

### *Of the cure of* Lupiæ, *that is, Wens, or Ganglions.*

A Wen or *Ganglion* is a tumor ſometimes hard, ſometimes ſoft, yet alwaies round, uſing to breed in dry, hard, and nervous parts. And ſeeing that ſome of the tumors mentioned before in the former Chapter, ſtick immoveable to the part to which they grow, becauſe they are contained in no ciſt, or bag; otherſome are moved up and down by the touch of your fingers, becauſe they are contained in a bag or bladder, it commonly comes to paſſe that Wens have their bladder wherein to contain them, and therefore we think fit, the rather more freely, and particularly to treat of their cure, becauſe they are more difficultly cured, eſpecially where they are inveterate and of long ſtanding.

What a *Glandglion* is.

The primitive cauſes of theſe are dull blows, fallings from high places, ſtrains, and other ſuch like occaſions. But the antecedent and conjunct cauſes are the ſame with thoſe of an *Atheroma*, *Meliceris* and *Steatoma*.

The cauſes.

The deſcription formerly ſet down, will furniſh you with the ſigns by which you may know when they are preſent; certainly from very ſmall beginnings they grow by little and little to a great bigneſs, in the ſpace of ſix or ſeven yeers, ſome of them yeeld much to the touch, and almoſt all of them are without pain.

Signes.

You may hinder ſuch as are beginning and firſt growing, from encreaſe by ſomewhat a ſtrong and frequent rubbing with your fingers. For ſo their bag or bladder, together with the skin wax thin, and the contained humor grows hot, is attenuated and reſolved. But if ſo you nothing prevail, you muſt lie upon them with your whole hand, or a flatted peece of wood as heavy as you can, untill ſuch time as the ciſt or bag be broken by your impreſſion; Then apply and ſtrongly bind unto it a plate of lead, rubbed over with Quick-ſilver; for I have many times found by experience, that it hath a wonderfull force to reſolve and waſt the ſubject humor. But if the Wen be in ſuch a place in which you can make no ſtrong impreſſion, as in the face, cheſt, belly, & throat, let there be applied an emplaiſter which hath a reſolving force, ſuch as this following hath; ℞ *gummi ammon. bdelii, galban. an.* ℥iij. *liquefiant in aceto, & trajiciantur per ſetaceum, addendo olei liliorum & lauri, an.* ℥j. *aqu. vitæ parum, pulveris ireos, ſalis ammon. ſulphur. vivi, vitrioli romani, an.* ℥ß. let them be all incorporated together, and make an Emplaiſter according to Art. But if the tumor cannot be thus reſolved, it muſt be opened with a knife or cautery. And after the Eſchar is removed, and the bag waſted by Ægyptiacum, Mercury, and the like, the ulcer muſt be cleanſed, repleniſhed with fleſh, and cicatrized.

Their cure at the beginning.

Plates of lead rubbed with Quick ſilver.

A reſolving plaiſter.

Things to waſt or conſume the bag.

Some-

Sometimes Wens grow to ſo great a maſſe, that they cannot be cured by the deſcribed remedies, wherefore they muſt be taken away by the root, by your hand and inſtrument, if ſo be that there be no danger by reaſon of their greatneſs, and ſo that they adhere not too cloſely to the adjacent parts, and if they be not too nigh to the greater veins and arteries; for it will be better in ſuch a cauſe to let them alone. This ſhall be your way to cut them off, or take them away. A ſmall inciſion muſt be made, even to the bladder, or bag, by which thruſt in a probe of a fingers thickneſs, hollowed in the midſt, round at the end, and as long as need ſhal require; then draw it many times about between the skin & the bag, even to the root of the Wen, that ſo the skin may be divided long waies, then it will be requiſite to make another inciſion overthwart, ſo that they may interſect each other like a croſs; then preſently draw the skin from the bladder, from the corners of the Wen, towards the root, and that with your finger covered with a fine linnen cloth, or elſe with a Razor if need require.

The manner to take away Wens.

But you muſt obſerve that in a Wen there are alwaies certain veſſels, which are ſmall in the beginning, but much encreaſed in proceſſe of time, according to the encreaſe of the Wen, whereof they are as it were the roots; wherefore if any *Hæmorrhagie* or flux of bloud happen, let it be ſtopped by binding the veſſels at their heads and roots, or make a ſtrait ligature at the roots of the Wen, with a peece of whipcord, or with a many times doubled thred, and let the ends hang forth until it fall away of its own accord. Neither will it bee ſufficient to have cut away all this tumor, but alſo it will be fit to cut away a portion of the skin, wherewith the tumor was covered, and only to leave ſo much as ſhall ſuffice to cover the part, then with a needle and thred draw together the lips of the inciſion, but in the interim let tents be put into the bottome of the ulcer untill it be perfectly cleanſed, and the reſt of the cure be workmanlike performed, even to the cicatrizing thereof.

A Hiſtory.

The Chirurgeon *Collo* and I uſing this method, in the preſence of Maſter Dr. *Violanius* the Kings Phyſitian, took away a Wen from Martiall *Colard*, the Major of *Burbon*; it hanged at his neck, as big as a mans head, and it weighed eight pounds; which made it ſo troubleſome and burdenſome to him, that he was forced to carry it bound up in a towell, as in a ſcrip.

What Wens to be cured by ligature. Which dangerous to cure.

Verily if theſe kind of tumors have a ſlender root and broad top, they muſt be ſtraitly tied and ſo cut off. But it is very difficult and full of dangerous chance to take away ſuch Wens as are ſeated in the neck, neer unto the Jugular veins, theſe under the Arm-holes, in the groins, and ſuch as are under the ham; by reaſon of the deadly force of ſuch ſymptomes, as may thence ariſe. We can only conjecture, not certainly ſay, what kind of matter may be contained in them. We can only know of what ſort it is, when by inciſion it is preſented to our ſight. Yet in ſuch as are very hard and do much reſiſt the touch, there are often found matters, which in conſiſtence may be reſembled to little ſtones or pibles.

A Hiſtory. The matter of a Wen is ſometimes taken for a *Cancer*.

I being on a time called to open the body of a great Lady, found in one of her breſts a body which might equal the bigneſs of an Hens egg, hard, and compact like a rough pible; it was held, whilſt ſhe lived, both by the Phyſitians and Chirurgeons, to be a *Cancer*, becauſe this hardneſs was very painfull to her, when it was but gently preſſed down.

Another Hiſtory.

But alſo ſome few yeers agon, I being called to the cure of a very honeſt woman, which was troubled with the ſame diſeaſe, ſtrongly withſtood the Phyſitians and Chirurgeons affirming it to be a *Cancer*, for the tumor had taken no deep root, the habit of the part was not changed from the native colour, the veins about it were not ſwollen, neither was there any other convincing ſign of a *Cancer*. For this ſame woman had her courſes at their due and uſuall time, and was well liking, and had a good colour in her face and body, was free from all ſort of pain, unleſſe when you preſſed down the part affected. Beſides thence forward the tumor grew not at all; no other evill accident befel her, yea verily ſhe lives merrily, and well both in body and mind.

How you may know a Wen from a *Cancer*.

## CHAP. XXI.

### *Of a* Ganglion *more particularly ſo called.*

What a *Ganglion* properly ſo called is. The cauſes.

THere are alſo certain ſmall tumors of the kind of *Lupiæ* or Wens, which grow on divers parts of the body, but chiefly on the wriſts of the hands, and ankles of the feet, being called by a more particular name *Ganglia*; they appear on the top of the skin, neither do they ever lie deep. The cauſe of them is either the imbecillity of a nerve or tendon got by wreſting, extenſion, a blow, labour, or other ſuch like cauſe. Through which occaſion the alimentary juice which flowed to theſe parts, ſeeing it can neither be concocted, nor aſſimilated into the proper ſubſtance, is converted into an humor of the like nature cold, and groſs, which in continuance of time heaping it ſelf up by little and little about the fibers, and the very ſubſtance of the tendon, concretes into a tumor.

What *Ganglia* may not be cured with iron Inſtruments.

It is not fit to uſe any iron inſtrument to theſe *Ganglia* which poſſeſs the tendons and joints, but only apply *Ammoniacum* and *Galbanum* diſſolved in Vinegar and *Aqua vitæ*: as Rx

*gumm*

*gummi ammon.& ſagapeni in aqua vitæ diſſolutorum, an.* ℥j. *coquantur ſuper cineres calidos ad formam emplaſtri,ſub finem adde ſulphuris vivi ſubtiliter pulveriſati* ℥ß, *fiat empl. ad uſum.* Alſo the Emplaiſter of *Vigo* with double *Mercury* would be good for the ſame purpoſe.

The tumor ſoftned by theſe remedies,muſt be wrought,rubbed, or preſſed,ſo long,untill the bladder or bag be broken under your fingers,which I have divers times done; then it will be expedient preſently to apply and bind hard thereunto a plate of lead rubbed with Quick-ſilver,which may waſt and conſume the remainder of the tumor.

Sometimes there are *Ganglia* ſeen hanging by a ſmall root,as it were a ſtring; wherefore they muſt be tied with a ſtring at the root,and every day twitched harder and harder, till ſuch time as they fall off. The reſt of the cure may be eaſily performed by the common rules of Art.

## CHAP. XXII.

### *Of the* Strumæ *or* Scrophulæ,*that is,the Kings-evill.*

What the *Scrophulæ* or Kings-evil is.

THe *Scrophulæ* are œdematous tumors ariſing in the glandulous parts, as the breſts,armholes, groins, but chiefly in the glandules of the neck. They appear either one or many,according to the quantity of that matter from whence they proceed,commonly contained in their proper ciſt,or bag, as *Atheromaes*, *Steatomaes*, and *Melicerides* are.

Their materiall cauſe. How they differ from other glandulous tumors.

They are made of a groſſe,cold,viſcid,and phlegmatick matter with ſome admixture of melancholy. They differ from other glandulous tumors;firſt in number, for moſt uſually there appear many of them united together,ſpringing from ſomewhat a deeper root than glandulous tumors doe;ſome of them are moveable,otherſome woven with the neighbouring nerves,remaining unremovable.

*Ganglia* appear fewer in number,and are without pain; but *Scrophulæ* oftentimes are painfull,eſpecially when they wax hot by putrefaction;ſo that ſometimes they degenerate into cancerous ulcers, not to be touched by inſtruments nor acrid medicines.

Their cure by diet.

Phlegmatick, melancholick, and gluttonous perſons,and ſuch as are accuſtomed to feed on cold and moiſt nouriſhments, as fiſh and cold water, and lead a ſedentarie and idle life, are ſubject to the *Scrophulæ*. They are cured by a moſt ſlender diet, for ſo the native heat by want of nouriſhment turned upon the material cauſe of ſuch like tumors,waſts it.

Emollient and reſolving medicines.

And they are cured by purging of the ſuperfluous humors, and alſo by application of emollient reſolving,and ſuppurating topick medicines,after this following manner. ℞ *Mucaginis alth.fænugr.& ficuum ping. an.* ℥ij,*olei liliorum, & chamæm.an.* ℥j,*pinguedinis anſeris & axungiæ porci* ℥ß, *Terebinth. Ven.* ℥iß, *ammoniaci, & galbani in aceto diſſolutorum an.* ℥j. *ceræ novæ quantum ſatis,fiat cerotum ſecundum artem ad modum diachyli magni.*

The ointment for the French diſeaſe,and the Emplaiſter of *Vigo* with *Mercury*, are excellent for this purpoſe,eſpecially if we continue ſo long untill the Patient come to Salivation,for ſo nature will disburden it ſelf of the humor, generating the *Scrophulæ*, which I have ſometimes tried with happy ſucceſſe. ℞ *Emplaſtri diachyl. alb. & mag.ceroti æſopi deſcriptionis Philagrii, an.* ℥ij. *Terebinth. claræ* ℥j. *olei liliorum parum, fiat emplaſtrum ſatis molle.* But if the *Scrophulæ* cannot by this means be reſolved,but as it oft-times happens, tend to ſuppuration, you muſt uſe ſuppuratives,as ℞ *rad. alth. & liliorum,an.* ℥iij. *coquantur in aqua communi, piſtentur, trajectis adde capitum alliorum ſub cineribus coctorum* ℥iij,*olei liliorum,& ping.anſeris & anat. an.* ℥iß,*farinæ ſeminis lini quantum ſatis,formetur cataplaſma.*

Suppuratives.

A note to be obſerved in opening *Scrophulous* tumors.

Here we muſt admoniſh the Chirurgeon, that he open not the *Scrophulæ* before that all the contained humor be fully and perfectly turned into *pus* or matter;otherwiſe the reſidue of the humor will remain crude, and will ſcarſe in a long time be brought to maturation; which precept muſt be principally obſerved in the *Scrophulæ*, and alſo ſometimes in other abſceſſes,which come to ſuppuration. For we muſt not as ſoon as any portion of the contained humors appears converted into *pus*,procure and haſten the apertion. For that portion of the ſuppurated humor,cauſes the reſt ſooner to turn into *pus*, which you may obſerve in inanimate bodies. For fruits which begin to periſh and rot,unleſs we preſently cut away the putrefying part,the reſidue quickly becomes rotten;there is alſo another reaſon; The native heat is the efficient cauſe of ſuppuration; it therefore (the ſore being opened) diminiſhed and weakned by reaſon of the diſſipation of the ſpirits,evacuated together with the humor,will cauſe the remaining portion of the humor not to ſuppurate, or that very hardly, and with much difficulty. Yet if the tumified part be ſubject,by its own nature,to corruption and putrefaction, as the fundament;if the contained matter be malign,or critical,it will be far better to haſten the apertion.

Naturall heat the cauſe of ſuppuration.

The Chirurgicall manner of curing, *Scrophulæ.*

There is alſo another way of curing the *Scrophulæ*,which is performed by the hand. For ſuch as are in the neck;and have no deep roots,by making inciſion through the skin, are pulled and cut away from theſe parts with which they were intangled. But in the performance of this work, we take ſpeciall care,that we doe not violate or hurt with our inſtrument,the jugular veins, the ſleepy arteries,or recurrent nerves. If at any time there be danger

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ger of any great efflux of bloud, after they are plucked from the skin, they muſt be tied at their roots, by thruſting through a needle and thred, and then binding the thred ſtrait on both ſides, that ſo bound they fall off by themſelves by little and little without any danger. The remainder of the cure may be performed according to the common rules of Art.

## CHAP. XXIII.

*Of the Feaver which happens upon an œdematous Tumor.*

How an intermitting Quotidian happens upon œdematous tumors.

HAving ſhewed all the differences of œdematous tumors, it remains that we briefly treat of the Symptomatical feaver, which is ſometimes ſeen to happen upon them. This therefore retaining the motion of the humor by which it is made, is commonly of their kind, which they name Intermitting Quotidians. Now the fit of a Quotidian comes every day, and in that repetition continues the ſpace of eighteen hours; the reſidue of the day it hath manifeſt intermiſſion.

The cauſe of a Quotidian feaver.

The primitive cauſes of this feaver are, the coldneſſe and humidity of the air encompaſſing us, the long uſe of cold meats and drinks, and of all ſuch things as are eaſily corrupted, as Summer fruits, crude fiſhes, and laſtly, the omiſſion of our accuſtomed exerciſe.

The antecedent cauſes are a great repletion of tumors, and theſe eſpecially phlegmatick. The conjunct cauſe, is phlegm putrefying in the habit of the body, and firſt region thereof without the greater veins.

The Signs.

The ſigns of this feaver are drawn from three things; as firſt naturall; for this Feaver or Ague chiefly ſeizes upon theſe which are of a cold and moiſt temper, as Old-men, Women, Children, Eunuches, becauſe they have abundance of phlegm; and it invades Old-men by its own nature, becauſe their native heat being weak, they cannot convert their meats, then taken in a ſmall quantity, into laudable blood, and the ſubſtance of the parts. But it takes children by accident, not of its ſelf, and the own nature, for children are hot and moiſt; but by reaſon of their voracity, or greedineſs, and their violent, inordinate, and continuall motion after their plentifull feeding, they heap up a great quantity of crude humors fit matter for this feaver; whereby it comes to paſſe, that fat children are chiefly troubled with this kind of feaver, becauſe they have the paſſages of their bodies ſtrait and ſtopped, or becauſe they are ſubject to Worms, they are troubled with pain, by corruption of their meat; whence ariſeth a hot diſtemper by putrefaction, and the elevation of putrid vapors, by which the heart being moleſted, is eaſily taken by this kind of feaver.

How children come to be ſubject to Quotidian feavers.

From things not naturall, the ſigns of this feaver are thus drawn. It chiefly takes one in Winter, and the Spring, in a cold and moiſt Region, in a ſedentary and idle life, by the uſe of meats, not only cold and moiſt, but alſo hot and dry, if they be devoured in ſuch plenty, that they overwhelm the native heat.

How phlegmatick humors happen to be generated by hot and dry meats.

For thus wine, although it be by faculty and nature, hot, and dry, yet taken too immoderately, it accumulates phlegmatick humors, and cauſes cold diſeaſes. Therefore drunkenneſs, gluttony, crudity, bathes and exerciſes preſently after meat, being they draw the meats as yet crude into the body and veins; and to conclude, all things cauſing much phlegm in us, may beget a Quotidian feaver. But by things contrary to nature, becauſe this feaver uſually follows cold diſeaſes, the Center, Circumference, and Habit of the body being refrigerated.

The ſymptoms of Quotidians.

The ſymptoms of this feaver are, the pain of the mouth of the ſtomack, becauſe that phlegm is commonly heaped up in this place, whence follows a vomiting, or caſting up of phlegm; the face looks pale, and the mouth is moiſt, without any thirſt, ofttentimes in the fit it ſelf; becauſe the ſtomack flowing with phlegm, the watery and thinner portion thereof continually flows up into the mouth and tongue, by the contiuuity of the inner coat of the ventricle common to the gullet and mouth.

The manner of the pulſe and heat in a Quotidian.

It takes one with coldneſs of the extreme parts, a ſmall and deep pulſe, which notwithſtanding in the vigour of the fit, becomes more ſtrong, great, full, and quick. Juſt after the ſame manner, as the heat of this feaver at the firſt touch appears mild, gentle, moiſt and vaporous; but at the length it is felt more acrid, no otherwiſe than fire kindled in green wood, which is ſmall, weak, and ſmoakie at the firſt; but at the length when the moiſture being overcome, doth no more hinder its action, it burns and flames freely.

Critical ſweats. The urin.

The Patients are freed from their fits with ſmall ſweats, which at the firſt fits break forth very ſparingly, but more plentifully when the *Criſis* is at hand; the urin at the firſt is pale and thick, and ſometimes thin, that is, when there is obſtruction. But when the matter is concoct, as in the ſtate, it is red: if at the beginning of the fit they caſt up any quantity of phlegm by vomit, and that fit be terminated in a plentifull ſweat, it ſhews the feaver will not long laſt; for it argues the ſtrength of nature, the yeelding and tenuitie of the matter flying up, and the excretion of the conjunct cauſe of the feaver.

Why Quotidians are oftimes long. Into what diſeaſes a Quartain uſually changes.

A Quotidian feaver is commonly long, becauſe the phlegmatick humor being cold, and moiſt by nature, is heavy and unapt for motion: neither is it without fear of a greater diſeaſe, becauſe oft-times it changes into a burning, or quartain feaver, eſpecially if it be bred

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of ſalt Phlegme; for ſaltneſs hath affinity with bitterneſs, wherefore by aduſtion it eaſily degenerates into it, ſo that, it need not ſeem very ſtrange, if ſalt phlegm by aduſtion turn into choler, or melancholy. Thoſe who recover of a Quotidian feaver, have their digeſtive faculty very weak; wherefore they muſt not be nouriſhed with ſtore of meats, nor with ſuch as are hard to digeſt. In a Quotidian the whole body is filled with crude humors, whereby it comes to paſſe that this Feaver oft-times laſts ſixty daies. But have a care, you be not deceived, and take a double tertian for a Quotidian, becauſe it takes the Patient every day as a Quotidian doth. Verily it will be very eaſie to diſtinguiſh theſe Feavers by the kind of the humor, and the propriety of the ſymptomes and accidents; beſide, Quotidians commonly take one in the evening, or the midſt of the night, as then when our bodies are refrigerated by the coldneſs of the air cauſed by the abſence of the Sun. Wherefore then the cold humors are moved in us, which were bridled a little before by the preſence and heat of the Sun. But on the contrary, double tertians take one about noon. The ſhortneſs and gentleneſs of the fit, the plentifull ſweat breaking forth, the matter being concocted, cauſes us to think the Quotidian ſhort and ſalutary.

*How to diſtinguiſh a quotidian from a double tertian.*

The cure is performed by two means; to wit, Diet, and Pharmacy. Let the Diet be ſlender and attenuating, let the patient breath in a cleer air moderately hot and dry; let his meats be bread well baked, cock or chicken broths in which have been boiled the roots of Parſly, Sorrell and the like.

*Diet.*

Neither at ſometimes will the uſe of hot meats, as thoſe which are ſpiced and ſalted, be unprofitable, eſpecially to ſuch as have their ſtomach aud liver much cooled. Let him eat Chickens, Mutton, Partridge and ſmall birds, river fiſhes and ſuch as live in ſtony waters fryed or boiled, rear egs and ſuch like. Theſe fruits are alſo good for him, Raiſons, ſtewed Prunes, Almonds and Dates. Let his drink be ſmall white wine mixed with boiled water. Moderate exerciſes will be good, as alſo frictions of the whole body: ſleep taken at a fitting time, and proportioned to waking, ſo that the time of ſleep fall not upon the time of the fit; for then it hurts very much; for calling the heat to the inner parts, it doubles the raging of the feaveriſh heat inwardly in the bowels.

*When the uſe of ſpiced and ſalted meats are fit.*

*When ſleep is hurtfull.*

For the paſſions of the mind, the patient muſt be merry, and comforted with a hope ſhortly to recover his health. It ſeems not amiſſe to ſome, at the coming of the fit to put the feet and legs into hot water, in which Chamomill, Dill, Melilot, Marjerom, Sage, and Roſemary have been boiled.

*Medicines.*

The medicines ſhall be ſuch ſyrups as are called digeſtive and aperitive, as ſyrup of Wormwood, Mints, of the five opening roots, *Oxymel* with a decoction of Chamomill, Calamint, Melilot, Dill, and the like, or with common decoctions. The Purgatives ſhall be *Diaphœnicon*, *Electuarium Diacarthami*, *Hiera picra*, Agarick, Turbith, of which you ſhall make potions with the water of Mints, Balm, Hyſſop, Sage, Fennell, Endive or the like, *Pillulæ aureæ* are alſo good. Theſe purgatives ſhall ſometimes be given in form of a bole with ſugar, as the Phyſitian being preſent ſhall think moſt fit and agreeable to the nature of the Patient.

About the ſtate of the diſeaſe, you muſt have a care of the ſtomach and principally of the mouth thereof, as being the chief ſeat of phlegm; wherefore it will be good to anoint it every other day with oil of Chamomill mixed with a little white wine, as alſo to unlade it by taking a vomit of the juice of Radiſh, and much *Oxymel*, or with the decoction of the ſeeds and roots of *Aſarum* and Chamomill; and ſyrup of vinegar will be very good, eſpecially at the beginning of the fit, when nature and the humors begin to move; for an inveterate Quotidian, though you can cure it by no other remedy, nothing is thought to conduce ſo much as one dram of old Treacle taken with ſugar in form of a bole, or to drink it diſſolved in *Aqua vitæ*.

*Care muſt be had of the ſtomach.*

*Vomits.*

*The uſe of Treacle in an inveterate quotidian.*

## CHAP. XXIV.

### *Of a* Scirrhus, *or an hard tumor proceeding of Melancholy.*

HAving ſhewed the nature of tumors cauſed by blood, choler and phlegm, it remains we ſpeak of theſe, which are bred of a melancholick humor; of theſe there are ſaid to be four differences. The firſt is of a true and legitimate *Scirrhus*, that is, of an hard tumor endued with little ſenſe, and ſo commonly without pain, generated of a naturall melancholick humor. The ſecond is, of an illegitimate *Scirrhus*, that is of an hard tumor inſenſible, and without pain, of a a Melancholick humor concrete by too much reſolving and refrigerating. The third is of a cancrous *Scirrhus* bred by the corruption and aduſtion of the Melancholick humor. The fourth of a phlegmonous, *Eryſipelous* or *Oedematous Scirrhus*, cauſed by Melancholy mixed with ſome other humor. The cauſe of all theſe kinds of Tumors is a groſſe, tough and tenacious humor concrete in any part. But the generation of ſuch an humor in the body happens either of an ill and irregular diet, or of the unnaturall affects

*What a true and legitimate *Scirrhus* is.*

*What an illegitimate *Scirrhus* is.*

of the liver or ſpleen, as obſtruction; or by ſuppreſſion of the *Hæmorrhoids* or Courſes.

The Signs. The ſigns are hardneſs, renitency, a blackiſh colour, and a dilation of the veins of the affected part with blackiſhneſs, by reaſon of the abundance of the groſs humor. The illegitimate or baſtard *Scirrhus* which is wholly without pain and ſenſe, and alſo the cancerous

Prognoſtick. admit no cure, and the true legitimate ſcarce yeeld to any. Thoſe which are brought to ſuppuration, eaſily turn into Cancers and fiſtulaes; theſe tumors though in the beginning they appear little, yet in proceſs of time they grow to a great bigneſs.

## CHAP. XXV.

### *Of the cure of a* Scirrhus.

Diet. THE Cure of a *Scirrhus* chiefly conſiſts of three heads. Firſt, The Phyſitian ſhall preſcribe a convenient diet, that is ſober and moderate in feeding, tending to humidity, and indifferent heat; for his manner of life, let it be quiet and free from all perturbation of anger, grief and ſadneſs, as alſo abhorring the uſe of venery. The ſecond is placed in the evacuation of the antecedent matter, as by Phlebotomy, if need require, and by purging, by procuring the *Hæmorrhoids* in men, and the courſes in women; let purgations be preſcribed of *Diacatholicon, Hiera, diaſenna*, polypody, *Epythymum* according to the mind of the learned Phyſitian. The third conſiſts in the convenient uſe of Topick medicines, that is, emollient at the beginning, and then preſently reſolving, or rather ſuch as are mixed both of reſolving and emollient faculties,

*Lib. 2. ad Glauconem.* as *Galen* teaches; for by the uſe of only emollient things there is danger of putrefaction and a *Cancer*, and only of reſolving there is fear of concretion, the ſubtiler part being reſolved, and the groſſer ſubſiding.

Emollients. The emollient ſhall be thus: ℞ *Rad. alth. lib. ſ. rad. liliorum* ℥iij. *coquantur in aqua com. piſtentur, trajiciantur per ſetaceum, addendo olei chamæm. & lilior. an.* ℥ij. *æſypi humidæ* ℥ß. *emplaſtri diachyl. alb. cum oleo liliorum diſſoluti* ℥iij, *ceræ albæ quantum ſit ſatis, fiat cerotum.* Or ℞ *gummi ammoniaci, galb. bdellii, ſtyracis liquidæ in aceto diſſolutorum, an.* ℥j, *diachyl. mag.* ℥jß, *olei liliorum, & axungiæ anſeris, an.* ℥j. *ceroti æſyp. deſcriptione Philagr.* ℥ij. *liqueſcant omnia ſimul, ceræ quantum ſit ſatis, ut inde fiat cerotum ſatis molle.* When you have ſufficiently uſed emollient things, fume the tumor with ſtrong Vinegar and *Aqua vitæ* poured upon a piece of a Milſtone, flint or brick heated very hot; for the ſo mollified humor will be rarified, attenuated and reſolved; then ſome while after renew your emollients, and then again apply your reſolvers to waſt that which remains, which could not be performed together and at once; for

*Lib. 2. ad Glau.* thus *Galen* healed a ſcirrhus in *Cercilius* his ſon. Goats dung is very good to diſcuſſe Scirrhous tumors; but the Emplaiſter of *Vigo* with a double quantity of Mercury

The efficacy of the Empl. of Vigo with Mercury. is effectuall above the reſt, as that which mollifies, reſolves and waſts all tumors of this kind.

## CHAP. XXVI.

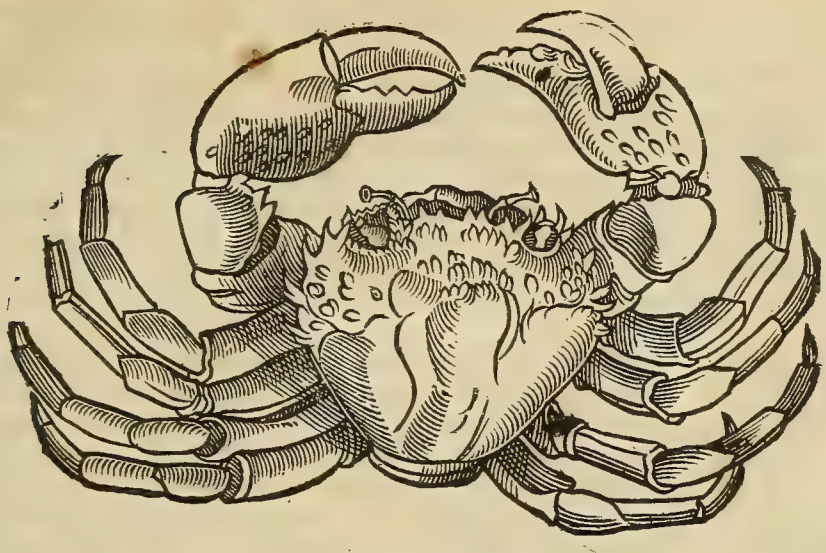
### *Of a* Cancer *already generated.*

What a *Cancer* is. A *Cancer* is an hard tumor rough and unequal, round, immoveable, of an aſh or livid colour, horrid by reaſon of the veins on every ſide, ſwollen with black blood, and ſpred abroad to the ſimilitude of the ſtretched out legs and claws of a Crab. It is a tumor hard to be known at the firſt, as that which ſcarce equalls the bigneſs of a Chick, or *Cicer*, after a little time it will come to the greatneſſe of a Haſell nut, unleſs peradventure provoked by ſomewhat too acrid medicins it ſodainly encreaſe being grown bigger, according to the meaſure of the encreaſe it torments the patient with pricking pain, with acrid heat, the groſſe blood reſiding in the veins growing hot, and inferring a ſenſe like the pricking of needles, from which

The nature of the pain. notwithſtanding the Patient hath oft-times ſome reſt. But becauſe this kind of tumor by the veins extended and ſpred about it like claws and feet, being of a livid and aſh colour, aſſociated with a roughneſs of the skin and tenacity of the humor, repreſents, as it were,

The reaſon of the name. the toothed claws of the Crab, therefore I thought it not amiſſe here to inſert the Figure of the Crab, that ſo the reaſon both of the name and thing might be more perſpicuous.

*The figure of the Crab, called* Cancer *in Latin.*



## CHAP. XXVII.

*Of the cauſes, kinds, and prognoſticks of a* Cancer.

HEre we acknowledge two cauſes of a *Cancer*, the antecedent, and conjunct. The antecedent cauſe depends upon the default of irregular diet, generating and heaping up groſſe and feculent blood; by the morbifick affection of the Liver diſpoſed to the generation of that blood; by the infirmity or weakneſs of the ſpleen in attracting and purging the blood; by the ſuppreſſion of the Courſes or Hæmorrhoids, or any ſuch accuſtomed evacuation. The conjunct cauſe is that groſs and melancholick humor ſticking and ſhut in the affected part as in a ſtrait. That melancholick blood which is more mild, and leſs malign, only increaſed by a degree of more fervid heat, breeds a not ulcerated *Cancer*, but the more malign and acrid cauſes, an ulcerated. For ſo the humor which generated Carbuncles, when it hath acquired great heat, acrimony, and malignity, corrodes, and ulcerates the part upon which it alights. A *Cancer* is made more fierce and raging by meats inflaming the blood, by perturbations of the mind, anger, heat, and medicines too acrid, oily, and emplaſtick, unfitly applied, both for time and place.

The cauſes of a *Cancer*.

The cauſes of a not ulcerated *Cancer*.

Amongſt the ſorts or kinds of *Cancers*, there be two chiefly eminent, that is, the ulcerated or manifeſt *Cancer*, and the not ulcerated or occult. But of *Cancers* ſome poſſeſs the internall parts, as the Guts, Womb, Fundament; others the externall, as the Breſts; alſo there is a recent, or late bred *Cancer*, and alſo an inveterate one. There is one ſmall, another great, one raging and malign, another more mild. Every *Cancer* is held almoſt incurable, or very difficult to be cured, for it is a diſeaſe altogether malign, to wit, a particular Leproſie. Therefore ſaith *Aetius*, a *Cancer* is not eaſily ſtaied untill it hath eaten even to the innermoſt of the part which it poſſeſſes. It invades women more frequently than men, and thoſe parts which are lax, rare, fungous, and glandulous, and therefore opportune to receive a defluxion of a groſs humor, ſuch are the breſts and all the emunctories of the noble parts. When it poſſeſſes the breſts, it often cauſes inflammation to the armholes, and ſends the ſwelling ever to the glandules thereof; whereupon the Patients do complain that a pricking pain, even pierces to their hearts. But this ſame pain alſo runs to the clavicles, and even to the inner ſide of the ſhoulder-blades and ſhoulders. When it is increaſed, and covers the noble parts, it admits no cure but by the hand; but in decayed bodies, whoſe ſtrength fail, eſpecially if the *Cancers* be inveterate, we muſt not attempt the cure, neither with inſtrument, nor with fire, neither by too acrid medicines, as potentiall cauteries: but we muſt only ſeek to keep them from growing more violent, and from ſpreading further, by gentle medicines, and a palliative cure. For thus many troubled with a *Cancer*, have attained even to old age. Therefore *Hippocrates* admoniſhes us, that it is better not to cure occult, or hidden *Cancers*; for the Patients cured (ſaith he) do quickly die, but ſuch as are not cured live longer.

The ſorts and differences of *Cancers*.

*Aetius lib. 6.* The parts moſt ſubject to *Cancers*.

What *Cancers* one muſt not undertake truely to cure.

## CHAP. XXVIII.

### *Of the Cure of a* Cancer *beginning, and not yet ulcerated.*

A *Cancer* beginning is oft hindred from encreaſing, before it faſten its roots, but when it hath once encreaſed, it admits no cure but by iron, as that which contemns, by reaſon of the malignity & contumacy, the force of all medicines. *Galen* affirms, he cured a *Cancer* not ulcerated.

*Lib. 2. ad Glau.*

Now that cure is performed by medicines, purging melancholy, by Phlebotomy, when the ſtrength and age of the Patient may well endure it, by ſhunning all things which may breed il and fæculent blood. The diſtemper of the Liver muſt firſt be corrected, the Spleen ned, as alſo the part affected; in men the Hæmorrhoides, in women their Courſes muſt be procured.

Diet.

Therefore thick and muddy wines, vinegar, brown bread, cold herbs, old cheeſe, old and ſalted fleſh, beef, veniſon, goat, hare, garlick, onions and muſtard; and laſtly all acrid, acid and other ſalt things, which may by any means incraſſate the blood, and inflame the humors, muſt be eſchewed. A cooling and humecting diet muſt be preſcribed; faſting eſchewed, as alſo watchings, immoderate labours, ſorrow, cares, and mournings; let him uſe ptiſans, and in his broths boil Mallows, Spinace, Lettuce, Sorrell, Purſlain, Succory, Hops, Violets, Borrage and the four cold ſeeds. But let him feed on Mutton, Veal, Kid, Capon, Pullet, young Hares, Partridges, Fiſhes of ſtony rivers, rear Egs; and uſe white wine but moderately for his drink.

How to handle the cancerous part.

Antidotes.

Aſſes milk.

The part affected with the *Cancer* muſt be gently handled, and not overburdened by over hard or heavy things, or by too ſolid or fat Emplaiſters; on the contrary gentle and mitigating medicines muſt be uſed; applying alſo at certain times ſuch things as reſiſt venome or poyſon, as Treacle and Mithridate. Aſſes milk is exceeding fit to aſſwage the acrimony of the cancerons humor. Therefore it muſt not only be taken inwardly, but alſo applyed outwardly to the cancerous ulcer, making thereof a fomentation.

## CHAP. XXIX.

### *Of the cure of an ulcerated* Cancer.

The Signs.

AN Ulcerated *Cancer* hath many ſigns common with that which is not ulcerated, as the roundneſſe of the tumor, the inequality, roughneſs, and pain; to the judgment of the eye, the tumor ſeems ſoft, but it is hard to the touch; the Ulcer is filthy, with lips, thick, ſwoln, hard, knotty, turned out, and ſtanding up, having a horrid aſpect, and caſting forth ichorous, filthy, and carion-like filth, ſometimes black, ſometimes mixed with rotten filth, and otherwhiles with much bloud. This kind of ulcer is malign, rebellious, and untractable, as that which contemns mild remedies, and becomes more fierce, by acrid and ſtrong; the pain, feaver, and all the ſymptoms being increaſed, from whence the powers are dejected, the waſting and conſumption of the body follows and laſtly death. Yet if it be ſmall, and in a part which may ſuffer amputation, the body being firſt purged, and blood drawn, the ſtrength of the Patient not diſſwading, it will be convenient to uſe the hand, and to take hold of, and cut away whatſoever is corrupt, even to the quick, that no fear of contagion may remain, or be left behind. The amputation finiſhed, the bloud muſt not be preſently ſtopped, but permitted to flow out in ſome meaſure, yea verily preſſed forth all about it, that ſo the veins ſwoln with black and melancholy bloud may be disburdened. When you have taken a ſufficient quantity of blood, the place muſt be ſeared with an actuall cautery. For that will ſtrengthen the part affected, draw forth the venenate quality, and alſo ſtay the defluxion. Then muſt you apply mitigating medicines, and procure the falling away of the Eſchar. To conclude, that which remains, muſt be performed according to the cure of other ulcers. Now we know and underſtand that all the *Cancer* is cut away, and all the malignity thereof extinct, when the ulcer caſts forth laudable matter, when that good fleſh begins to grow by little and little, like to the grains of a Pomegranat, the pricking pain, and all the ſymptoms being aſſwaged. Yet the cure of an ulcerated *Cancer* which ſhall poſſeſs the lips may be more happily and mildly performed, no cauſtick medicine being applyed after ſection, ſo alſo that ſcarce any deformity will be left, when it is cicatrized. Which new and never formerly tried, or written of way, as far as I know, I found and performed in a man of fifty years old. Doctor *John Altine*, a moſt learned Phyſitian being called to Counſell, *James Guillemeau*, and Maſter *Euſtachius* the Kings Chirurgeons, and *John Le Ieune* the Duke of *Guiſe* his moſt worthy Chirurgeon being preſent.

How & where a *Cancer* may be cut away.

What to be obſerved in cutting away a *Cancer*.

The benefit of applying a cautery after amputation of the *Cancer*.

Signs that a *Cancer* is well taken away.

The way is this; The *Cancer* muſt be thruſt through the lips on both ſides, above and below

below with a needle and thred, that ſo you may rule and govern the *Cancer* with your left hand, by the benefit of the thred (leſt any portion thereof ſhould ſcape the inſtrument in cutting) and then with your Sizers in the right hand, you may cut it off all at once; yet it muſt be ſo done, that ſome ſubſtance of the inner part of the lip, which is next to the teeth may remain, (if ſo be that the *Cancer* be not grown quite through) which may ſerve as it were for a foundation to generate fleſh to fill up the hollowneſs again. Then when it hath bled ſufficiently, the ſides and brinks of the wound muſt be ſcarified on the right and left ſides, within, and without, with ſomewhat a deep ſcarification, that ſo (when we would draw together the ſides and lips of the wound, by that manner of ſtitching, which is uſed in an hare lip) we may have the fleſh more pliant and tractable to the needle and thred. The reſidue of the cure muſt be performed juſt after the ſame manner as we uſe in hare lips; of which we ſhall treat hereafter.

A new and obſervable way of taking away a *Cancer* from the lip.

## CHAP. XXX.

*Of the Topicke medicines to be applied to an ulcerated, and not ulcerated* Cancer.

WE at the beginning uſe repercuſſive medicines, ſuch as are the juices of Night-ſhade, Plantain, Henbane, Lettuce, Sorrell, Houſeleek, Water Lentill or Ducks meat, Knotgraſſe, Pomegranates, and the like. Alſo *oleum roſarum omphacinum*, the powders of Sumach, Berberies, Litharge, Ceruſe, Burnt-lead, *Tutia*, Quickſilver, and the like. Of which you may compoſe Fomentations, Liniments, Ointments, Cataplaſmes, Emplaiſters. *Emplaſtrum Diacalcitheos* diſſolved with juice of Nightſhade, and oil of Roſes is very fit for not ulcerated *Cancers*. *Pompholix*, or *Tutia*, waſhed in juice of Nightſhade, or Plantain, is very good for ulcerated *Cancers*. Beſides this following medicine is very commendable.

Repelling medicines.

℞ *Lytharg. & ceruſ. an.* ℥j, *terantur in mortario plumb. cum oleo roſar. donec reducantur ad conſiſtentiam linimenti vel unguenti*; and there may be uſe of a reſolving and repercuſſive ointment, as ℞ *plumbi uſti loti, pomphol. thuris, an.* ℥ijſß, *abſinth. pontic.* ℥ß, *olei roſarum* ℥iij, *ceræ* ℥ vj, *ſucci ſolani, quantum ſufficit ad unguenti craſſitudinem*. They very much commend *Theodorickes* Emplaiſter to aſſwage the pain of ulcerated *Cancers*.

℞ *olei roſ. ceræ alb. an.* ℥ijß, *ſucci granat. & ſolani, an.* ℥ij, *ceruſæ lotæ* ℥j, *plumbi uſti, loti, & tuthiæ præpar. an.* ℥ß, *thuris, maſtich. an.* ℥ij, *fiat empl. molle*. This following ointment I have often uſed with good ſucceſſe,

*Theodorickes* Emplaiſter.

℞ *Theriac. veter.* ℥j, *ſucci cancrorum* ℥ß, *ſucci lactucæ & olei roſar. an.* ℥iß, *vitel. ovorum ſub cinerib. coct.* ij, *camphor.* ℥ß. *piſtentur omnia in mortario plumb. & fiat unguentum.*

℞ *Spum. argent. axungiæ porci recentis, ceræ alb. an.* ℔ß, *olei boni* ℥viij, *vitel. ovorum aſſat.* iiij, *fiat unguent. ſervetur uſui*. And when you will uſe it, mix it with a little ointment of Roſes. I have alſo mitigated great pain by applying Leaches to an unulcerated *Cancer*, in that part where the torment was moſt vehement, by disburdening the part of ſome portion of the malign humor; which ſame thing I have done by application of yong Whelps, or Kitlings, or Pidgeons, or Chickens cut long waies, and preſently applied to the ulcer, and now and then changed as ſoon as their heat ſeems diſſolved; and others applied for the naturall heat in an anodyne or mitigating medicine. *John Baptiſta Theodoſius* in his Epiſtles, writes, that a cataplaſme of the herb *Eryſimum* or Cadlock, being beaten, is very good to be applied to a *Cancer* not ulcerated; but if the *Cancer* be ulcerated, he boils this ſame herb in *Hydromel*, and ſo by injections and lotions cleanſes the ulcer, and mitigates the pain. If the *Cancer* affect the womb, the patient feels the pricking of the pain in the groins above the *pecten*, and in the Kidneyes, and is often troubled with a difficulty of making water; but when it is ulcerated it poures forth filth or matter exceeding ſtinking and carion-like, and that in great plenty; the filthy vapour of which carryed up to the heart and brain cauſes often ſwounding. Now to mitigate the pains of ſuch like places, the following medicines are of good uſe.

Leaches.

The application of Whelps, Chickens, &c.

*Epiſt.* 21.

The eſtate of *Eryſimum*.

The ſigns of the *Cancer* in the womb.

℞ *Mucag. ſemin. lini; fœnugr. extract. in aqua roſar. & plantaginis quod ſatis eſt*; Of this being warm make a fomentation.

℞ *Rad. Atheæ* ℔ß. *coquatur in hydromelite, piſtetur & trajiciatur, addendo olei roſar. parum, fiat Cataplaſma*. Alſo you ſhall make divers peſſaries according to the different kinds of pain; alſo make injections of the juice of Plantain, Knotgraſſe, Lettuce, Purſlain mixed together, and agitated or laboured in a leaden mortar with a little oil of Roſes; for this kind of medicine is commended by *Galen* in every kind of ulcerated *Cancers*. Alſo this following water is very profitable, and often approved by me. ℞ *Stercoris bubuli* ℔iiij. *herbæ Roberti, plantag. ſempervivi, hyſcyami, portulac. lactuc. endiv. an. m.j. cancros fluviatiles, num.* xij. let them be all beaten together and diſtilled in a leaden Alembick, keep the liquor for uſe and with it make often injection into the part; or if the ſite of the part will permit, let the cancerous ulcers be waſhed therewith, and pledgets of lint ſteeped therein, be applyed and renewed

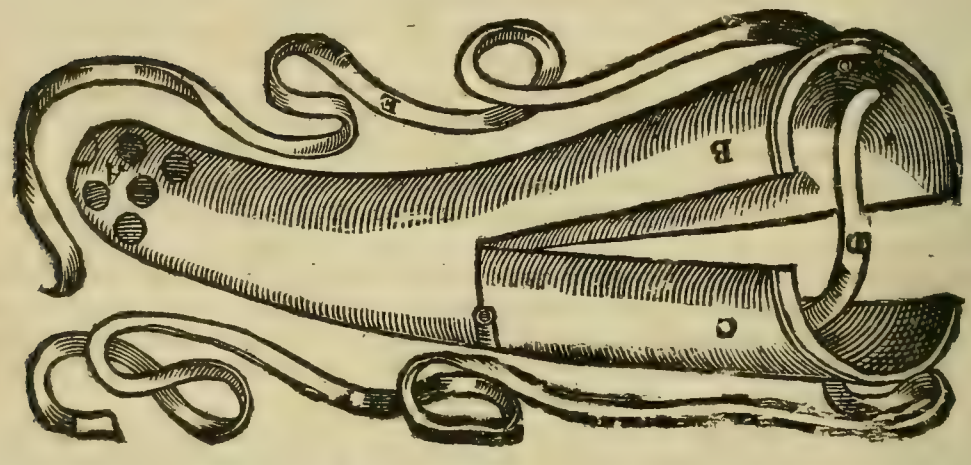
*Lib. 9. Simpl.*

ever and anon; for ſo the acrimony and force of the inflammation is retunded, and the pain aſſwaged. *Galen* beats into powder river Crabs burnt; the powder mixed with ointment of Roſes is moſt profitably applied upon lint to cancerous ulcers.

*Lib. 4. de comp. med. ſecundum gen.*

It will be very convenient to put into the neck of the womb the following inſtrument made of Gold or Silver, whereby the cancerous filth may have free and ſafe paſſage forth, and the filthy and putredinous vapors may more eaſily breath forth. Therefore let it be hollow quite through, ſome five or ſix fingers long, and about the bigneſs of ones thumb, at the upper end, perforated with many holes whereby the filth may have paſſage forth. Let the outer or lower end be ſome two fingers thick in the circumference, make it with a neat ſpring, that may hold that end open more, or leſs, according to the Phyſitians mind; let there be two ſtrings or laces put unto it, by which being tyed before and behind to the rowler, with which the woman ſhall girt her loins, the Device may be kept from falling, as you may ſee in the following figure.

*A Vent made like a Peſſary for the womb affected with a cancerous ulcer.*




A. *Shews the upper end perforated with five or ſix holes.*
B. *The lower end.*
C. *That part of the end which is opened by the ſpring, which is marked with the Letter* D.
EE. *The ſtrings or laces.*

*Lib. 6. ſimp.* Plates of Lead.

Neither is that remedy for not ulcerated *Cancers* to be contemned, which conſiſts of a plate of lead beſmeared with Quick-ſilver; for *Galen* himſelf teſtifies that lead is a good medicine for malign and inveterate ulcers. But *Guido Cauliacenſis* is a witneſs of ancient credit and learning, that ſuch plates of lead rubbed over with Quick-ſilver, to ſuch malign ulcers as contemn the force of other medicines, are as it were Antidotes, to waſt and overcome their malignity and evill nature. This kind of remedy, when it was preſcribed by that moſt excellent Phyſitian *Hollerius*, who commanded me to apply it to the Lady of *Montigni* Maid of Honour to the Queen mother, troubled with a *Cancer* in her left breſt, which equalled the bigneſs of a Wallnut, did not truely throughly heal it, yet notwithſtanding kept it from further growth. Wherefore at the length growing weary of it, when ſhe had committed herſelf to a certain Phyſitian boldly promiſing her quick help, ſhe tryed with loſſe of her life, how dangerous, and diſadvantagious the cure of a *Cancer* was, which is undertaken according to the manner of healing other ulcers; for this Phyſitian, when he had caſt away this our medicine, and had begun the cure with mollifying, heating and attractive things, the pain, inflammation and al the other ſymptomes encreaſing the tumor grew to that bigneſſe, that being the humor drawn thither could not be contained in the part it ſelf, it ſtretched the breſt forth ſo much, that it broke it in the middle, juſt as a Pomgranat cleaves when it comes to its full maturity; whereupon an immoderate flux of blood following, for ſtaying whereof he was forc't to ſtrew cauſtick powders thereon; but by this means the inflammation and pain becoming more raging, and ſwoundings coming upon her, ſhe poor Soul in ſtead of her promiſed health, yeelded up her ghoſt in the Phyſitians boſome.

A Hiſtory.

CHAP.

## CHAP. XXXI.

### *Of the Feaver which happeneth in Scirrhous Tumors.*

SUch a Feaver is a Quartain, or certainly coming near unto the nature of a Quartain, by reaſon of the nature of the Melancholick humor of which it is bred. For this ſhut up in a certain ſeat in which it makes the tumor, by communication of putrid vapours heats the heart above meaſure, & enflames the humors contained therein, whence ariſes a Feaver. Now therefore a quartain is a Feaver coming every fourth day, and having two dayes intermiſſion. Why a quartain happens upon ſcirrhous tumors.

The primitive cauſes thereof are theſe things which encreaſe Melancholick humors in the body, ſuch as the long eating of pulſe, of courſe and burnt bread, of ſalt fleſh and fiſh, of groſs meats, as Beef, Goat, Veniſon, old Hares, old Cheeſe, Cabbage, thick and muddy wines and other ſuch things of the ſame kind.

The antecedent cauſes are a heaped up plenty of Melancholick humors abounding over all the body. But the conjunct cauſes are Melancholick humors putrefying without the greater veſſels, in the ſmall veins and habit of the body.

We may gather the ſigns of a Quartain feaver from things which they call naturall, not naturall, and againſt nature; from things naturall, for a cold and dry temper, old age, cold and fat men, having their veins ſmall, and lying hid, their ſpleen ſwollen and weak, are uſually troubled with quartain Feavers. The ſigns.

Of things not naturall; this Feaver, or Ague is frequent in Autumne, not only becauſe, for that it is cold and dry, it is fit to heap up Melancholick humors; but chiefly by reaſon that the humors by the heat of the preceding Summer are eaſily converted into aduſt Melancholy, whence far worſer and more dangerous quartains ariſe, than of the ſimple Melancholick humor; to conclude, through any cold or dry ſeaſon in a region cold and dry, men that have the like Temper eaſily fall into quartains; if to theſe a painfull kind of life full of danger and ſorrow doth accrew. Why they are frequent in Autumne.

Of things contrary to nature; becauſe the fits take one with painfull ſhaking, inferring as it were the ſenſe of breaking or ſhaking the bones; further it taketh one every fourth day with an itching over the whole body, and oft-times with a thin skurfe and puſtules, eſpecially on the legs; the pulſe at the beginning is little, ſlow, and deep, and the urine alſo is then white and wateriſh, inclining to ſomewhat a dark colour.

In the declination when the matter is concocted the urine becomes black, not occaſioned by any malign Symptome or preternaturall exceſs of heat, (for ſo it ſhould be deadly) but by excretion of the conjunct matter. The fit of the Quartain continues 24 houres, but the intermiſſion is 48 houres. It often takes its originall from an obſtruction, pain, and *Scirrhus* of the Spleen, and of the ſuppreſſion of the courſes and Hæmorrhoides.

Quartains taken in the Summer are for the moſt part ſhort, but in the Autumn long, eſpecially ſuch as continue till Winter. Thoſe which come by ſucceſſion of any diſeaſe of the Liver, Spleen, or any other precedent diſeaſe are worſe than ſuch as are bred of themſelves, and commonly end in a Dropſie. But thoſe which happen without the fault of any bowels, and to ſuch a patient, as will be governed by the Phyſitian in his Diet, infer no greater harm, but free him from more grievous and long diſeaſes, as Melancholy, the Falling ſickneſs, Convulſions, Madneſs, becauſe the Melancholy humor, the author of ſuch diſeaſes is expelled every fourth day by the force of the fit of the Quartain. Prognoſtick. From what diſeaſes a quartain frees one.

A Quartain Feaver, if there be no error committed, commonly exceeds not a year, for otherwiſe ſome Quartains have been found to laſt to the twelfth year according to the opinion of *Avicen:* the Quartain beginning in Autumn is oft-times ended in the following ſpring; the Quartain which is cauſed by aduſt blood, or choler, or Salt flegm, is more eaſily and ſooner cured, than that which proceeds from an aduſt Melancholy humor; becauſe the Melancholy humor, terreſtriall of its own nature, and harder to be diſcuſſed than any other humor, is again made by aduſtion (the ſubtiller parts being diſſolved and the groſſer ſubſiding) more ſtubborn, groſs, malign, and acrid. The cure is wholly abſolved by two means, that is, by Diet and medicines. The diet ought to be preſcribed contrery to the cauſe of the Feaver in the uſe of the ſix things not naturall, as much as lyes in our power. Wherefore the Patient ſhall eſchew Swines fleſh, flatulent, viſcid and glutinous meats, fenny fowls, ſalt meats and Veniſon, and all things of hard digeſtion. The uſe of white wine indifferent hot and thin, is convenient to attenuate and incide the groſs humor, and to move urine and ſweat; yea verily at the beginning of the fit a draught of ſuch wine will cauſe vomiting, which is a thing of ſo great moment, that by this one remedy many have been cured. Yet if we may take occaſion and opportunity to provoke vomit there is no time thought fitter for that purpoſe then preſently after meat; for then it is the ſooner provoked, the fibers of the ſtomach being humected and relaxed, and the ſtomach is ſooner turned to vomiting, whereupon follows a more plentiful, happy & eaſie evacuation of the Phlegmatique and Cholerick humor, and leſs troubleſome to nature: and of all the cruDiet. How much vomiting prevails to cure a quartain.

dities

dities with which the mouth of the ventricle abounds in a Quartane, by reaſon of the more copious afflux of the Melancholick humor, which by his qualities cold and dry, diſturbes all the actions and naturall faculties. Moreover exerciſes and frictions are good before meat; ſuch paſſions of the mind as are contrary to the cauſe from which this Feaver takes his originall, are fit to be cheriſhed by the patient; as Laughter, Jeſting, Muſick, and all ſuch like things full of pleaſure and mirth. At the beginning the patient muſt be gently handled and dealt withall, and we muſt abſtain from all very ſtrong medicines untill ſuch time, as the diſeaſe hath been of ſome continuance. For this humor, contumacious at the beginning when as yet nature hath attempted nothing, is again made more ſtubborn, terreſtriall and dry, by the almoſt fiery heat of acrid medicines. If the body abound with blood, ſome part thereof muſt be taken away by opening the Median or Baſilik vein of the left arm, with this caution, that if it appear more groſs and black, we ſuffer it to flow more plentifully; if more thin, and tinctured with a laudable red colour that we preſently ſtay it. The matter of this feaver muſt be ripened, concocted and diminiſhed with the Syrups of *Epithymum*, of *Scolopendrium*, of Mayden hair, Agrimony, with the waters of Hops, Bugloſs, Borage and the like. I ſincerely proteſt, next unto God, I have cured very many quartains by giving a portion of a little Treakle diſſolved in about ſome two ounces of *Aqua vitæ*, alſo ſometimes by two or three grains of Musk diſſolved in Muskadine, given at the beginning of a particular fit towards the generall declination of the diſeaſe, after generall purgations the humor and body being prepared, and the powers ſtrong; And certainly an inveterate Quartain can ſcarce ever bee diſcuſſed unleſs the body be much heated with meats and medicines. Therefore it is not altogether to be diſproved which many ſay, that they have driven away a quartain by taking a draught of wine every day as ſoon as they came forth of their bed, in which ſome leaves of Sage had been infuſed all the night. Alſo it is good a little before the fit to anoint all the ſpine of the back with oyls heating all the nervous parts, ſuch as are the oyl of Rue, Walnuts, of the Peppers, mixing therewith a little *Aqua vitæ*, but for this purpoſe the oyl of *Caſtoreum* which hath been boyled in an apple of *Coloquintida*, the Kernels taken out, upon hot coles to the conſumption of the half part, mixing therewith ſome little quantity of the powders of Pepper, Pelitory of *Spain* and *Euphorbium*, is excellent. Certainly ſuch like Inunctions are good not only to mitigate the vehemency of the terrible ſhaking, but alſo to provoke ſweats; for becauſe by their humid heat they diſcuſs this humor being dull and rebellious to the expulſive faculty, for the Melancholy is as it were the droſs and mud of the blood. Therefore if on the contrary the Quartain Feaver ſhall be cauſed by aduſt choler wee muſt hope for and expect a cure by refrigerating and humective medicines, ſuch as Sorrell, Lettuce, Purſlane, broths of the decoction of Cowcumbers, Gourds, Mellons and Pompions. For in this caſe if any uſe hot medicines, he ſhall make this humor moſt obſtinate by the reſolving of the ſubtiler parts. Thus *Trallianus* boaſts that he hath cured theſe kinds of Quartane Feaver by the only uſe of refrigerating *Epithemaes* being often repeated a little before the beginning of the fit. And this is the ſum of the Cure of true and legitimate intermitting Feavers. That is, of thoſe which are cauſed by one ſimple humor, whereby the Cure of thoſe which they call baſtard intermitting Feavers, may be eaſily gathered and underſtood; as which are bred by a humor impure and not of one kind, but mixt or compoſed by admixture of ſome other matter; for example, according to the mixture of divers humors Phlegmatick and cholerick, the medicines muſt alſo be mixt, as if it were a confuſed kind of Feaver of a *Quotidian* and *Tertian*; it muſt be cured by a medicine compoſed of things evacuating flegm and choler.

Medicines.

What quartains muſt be cured with refrigerating things.

What baſtard Agues are, and how they muſt be cured.

## CHAP. XXXII.

*Of an* Aneuriſma, *that is, the dilatation, or ſpringing of an Artery, Vein, or Sinew.*

What it is.

AN *Aneuriſma* is a ſoft tumor yeelding to the touch, made by the blood and ſpirit powred forth under the fleſh and Muſcles, by the dilatation or relaxation of an Artery. Yet the Author of the definitions ſeems to call any dilatation of any venous veſſell by the name of an *Aneuriſma*. *Galen* calls an *Aneuriſma* an opening made of the *Anaſtomaſis*, of an Artery. Alſo an *Aneuriſma* is made when an Artery that is wounded cloſeth too ſlowly, the ſubſtance which is above it being in the mean time agglutinated, filled with fleſh and cicatrized, which doth not ſeldome happen in opening of Arteries unskilfully performed and negligently cured; therefore *Aneuriſmaes* are abſolutely made by the *Anaſtomaſis*, ſpringing, breaking, *Eroſion*, and wounding of the Arteries. Theſe happen in all parts of the body, but more frequently in the throat, eſpecially in women after a painfull travail. For when as they more ſtrongly ſtrive to hold their breath, for the more powerfull expulſion of the birth, it happens that the Artery is dilated and broken, whence follows an effuſion of blood and ſpirits under the skin. The ſigns are, a ſwelling one while great, another ſmall, with a pulſation and a colour not varying from the native conſtitution of the skin. It is a ſoft tumor, and ſo yeelding to the impreſſion

In what parts they chiefly happen.

of

of the fingers that if it peradventure be ſmall, it wholly vaniſheth, the Arterious blood and ſpirits flying back into the body of the Artery, but preſently aſſoon as you take your fingers away, they return again with like celerity. Some *Aneuriſmaes* do not only when they are preſſed, but alſo of themſelves make a ſenſible hiſſing, if you lay your ear near to them, by reaſon of the motion of the vitall ſpirit ruſhing with great violence through the ſtraitneſs of the paſſage.

Wherefore in *Aneuriſmaes* in which there is a great rupture of the Artery, ſuch a noiſe is not heard, becauſe the ſpirit is carryed through a larger paſſage. Great *Aneuriſmaes* under the Arm pits, in the Groins and other partt wherein there are large veſſels, admit no cure, becauſe ſo great an eruption of blood and ſpirit often follows upon ſuch an inciſion, that death prevents both Art and Cure. Which I obſerved a few years ago in a certain Prieſt of Saint *Andrews* of the Arches, Mr. *John Maillet*, dwelling with a chief Preſident *Chriſtopher de Thou*. Who having an *Aneuriſma* at the ſetting on of the ſhoulder about the bigneſs of a Wall-nut, I charged him, he ſhould not let it be opened, for if he did it would bring him into manifeſt danger of his life, and that it would be more ſafe for him to break the violence thereof with double clothes ſteeped in the juyce of Night-ſhade & Houſleek, with new and wheyey cheeſe mixt therewith: Or with *Vnguentum de Bolo* or *Emplaſtrum contra rupturam* and ſuch other refrigerating and aſtringent medicines, if he would lay upon it a thin plate of Lead, and would uſe ſhorter breeches that his doublet might ſerve to hold it too, to which he might faſten his breeches in ſtead of a ſwath, & in the mean time he ſhould eſchew all things which attenuate and inflame the blood, but eſpecially he ſhould keep himſelf from all great ſtraining of his voice. Although he had uſed his diet for a yeer, yet he could not ſo handle the matter but that the tumor increaſed, which he obſerving goes to a Barber, who ſuppoſing the tumor to be of the kind of vulgar impoſtumes, applies to it in the Evening a Cauſtick cauſing an Eſchar ſo to open it. In the Morning ſuch an abundance of blood flowed forth from the tumor being opened, that he therewith aſtoniſhed, implores all poſſible ayd, and bids that I ſhould be called to ſtay this his great bleeding, and he repented that he had not followed my directions. Wherefore I am called, but when I was ſcarce over the threſhold, he gave up his ghoſt with his blood. Wherefore I diligently admoniſh the young Chirurgeon that he do not raſhly open *Aneuriſmaes* unleſs they be ſmal in an ignoble part, and not indued with large veſſels, but rather let him perform the cure after this manner. Cut the skin which lyes over it untill the Artery appear, and then ſeparate it with your knife from the particles about it, then thruſt a blunt and crooked needle with a thred in it under it, bind it, then cut it off and ſo expect the falling off of the thred of it ſelf whiles nature covers the orifices of the cut Artery with new fleſh, then the reſidue of the cnre may be performed after the manner of ſimple wounds. The *Aneuriſmaes* which happen in the internall parts are incurable. Such as frequently happen to thoſe who have often had the unction and ſweat for the cure of the French diſeaſe, becauſe the blood being ſo attenuated and heated therewith that it cannot be contained in the receptacles of the Artery, it diſtends it to that largneſs as to hold a mans Fiſt; Which I have obſerved in the dead body of a certain Taylor, who by an *Aneuriſma* of the Arterious vein ſuddenly whilſt he was playing at Tennis fell down dead, the veſſel being broken: his body being opened I found a great quantity of blood powred forth into the capacity of the Cheſt, but the body of the Artery was dilated to that largneſs I formerly mentioned, and the inner coat thereof was bony. For which cauſe within a while after I ſhewed it to the great admiration of the beholders in the Phyſitians School whilſt I publiquely diſſected a body there; the whilſt he lived ſaid he felt a beating and a great heat over all his body by the force of the pulſation of all the Arteries, by occaſion whereof he often ſwounded. Doctor *Syluius* the Kings profeſſor of Phyſick at that time forbad him the uſe of Wine, and wiſhed him to uſe boyled water for his drink, and Curds and new Cheeſes for his meat, and to apply them in form of Cataplaſms upon the grieved and ſwoln part. At night he uſed a ptiſan of Barly meal and Poppy-ſeeds, and was purged now and then with a Clyſter of refrigerating and emollient things, or with Caſſia alone, by which medicines he ſaid he found himſelf much better. The cauſe of ſuch a bony conſtitution of the Arteries by *Aneuriſmaes* is, for that the hot and fervid blood firſt dilates the Coats of an Artery, then breaks them; which when it happens, it then borrows from the neighbouring bodies a fit matter to reſtore the looſed continuity thereof.

Prognoſtick.

A Hiſtory.

*Aneuriſmaes* muſt not raſhly be opened.

How they muſt be cured.

Theſe of the inward parts incurable.

A Hiſtory.

This matter whilſt by little and little it is dryed and hardened, it degenerates into a griſtly or elſe a bony ſubſtance, juſt by the force of the ſame materiall and efficient cauſes, by which ſtones are generated in the reins and bladder. For the more terreſtriall portion of the blood is dryed and condenſed by the power of the unnaturall heat contained in the part affected with an *Aneuriſma*; whereby it comes to paſs that the ſubſtance added to the dilated and broken Artery is turned into a body of a bony conſiſtence. In which the ſingular providence of nature, the handmaid of God is ſhewed, as that which, as it were by making and oppoſing a new wall or bank, would hinder and break the violence of the raging blood ſwelling with the abundance of the vitall ſpirits; unleſs any had rather to refer the cauſe of that hardneſs to the continuall application of refrigerating and aſtringent

medicines

*Lib. 4. Cap. ult. de præſ. ex pulſu.*
A Caution in the knowing of *Aneuriſmaes.*

medicines. Which have power to condenſate and harden, as may not obſcurely be gathered by the writings of *Galen.* But beware you be not deceived by the forementioned ſigns; for ſometimes in large *Aneuriſmaes* you can perceive no pulſation, neither can you force the blood into the Artery by the preſſure of your fingers, either becauſe the quantity of ſuch blood is greater than which can be contained in the ancient receptacles of the Artery, or becauſe it is condenſate and concrete into clods, whereupon wanting the benefit of ventilation from the heart, it preſently putrefies; Thence enſue great pain, a Gangren, and mortification of the part, and laſtly the death of the Creature.

## *The End of the Seventh Book.*

# OF PARTICULAR *TUMORS* AGAINST NATURE.

### The Eight Book.

## *The Preface.*

BEcauſe the Cure of diſeaſes muſt be varied according to the variety of the temper, not only of the body in generall, but alſo of each part thereof; the ſtrength, figure, form, ſite, and ſenſe thereof being taken into conſideration: I think it worth my pains, having already ſpoken of Tumors in generall, if I ſhall treat of them in particular which affect each part of the body, beginning with thoſe which aſſail the head. Therefore the Tumor either affects the whole head, or elſe only ſome particle thereof, as the Eyes, Ears, Noſe, Gums and the like. Let the *Hydrocephalos*, and *Phyſocephalos* be examples of thoſe tumors which poſſeſs the whole head.

### CHAP. I.

*Of an* Hydrocephalos *or watry tumor which commonly affects the heads of Infants.*

What it is.

THe Greeks call this diſeaſe *Hydrocephalos*, as it were a Dropſie of the Head, by a wateriſh humor; being a diſeaſe almoſt peculiar to Infants newly born. It hath for an externall cauſe the violent compreſſion of the head by the hand of the Midwife or otherwiſe at the birth, or by a fall, contuſion and the like.

The cauſes.

For hence comes a breaking of a vein, or Artery, and an effuſion of the blood under the skin. Which by corruption becoming whayiſh, laſtly degenerateth into a certain wateriſh humor. It hath alſo an inward cauſe, which is the aboundance of ſerous and acrid blood, which by its tenuity and heat ſweats through the pores of the veſſels, ſometimes between the Muſculous skin of the head and the *Pericranium*, ſometimes between the *Pericranium* and the skull, and ſometimes between the skull and the membrane called *Dura mater*, and otherwhiles in the ventricles of the brain.

Differences by reaſon of place.

The

The ſigns of it, contained in the ſpace between the Muſculous skin and the *Pericranium*, are a manifeſt tumor without pain, ſoft, and much yeelding to the preſſure of the fingers. The Signs when it remaineth between the *Pericranium* and the skull, are for the moſt part like the forenamed, unleſs it be that the Tumor is a little harder, and not ſo yeelding to the finger, by reaſon of the parts between it and the finger; And alſo there is ſomewhat more ſenſe of pain. But when it is in the ſpace between the skull and *Dura mater*, or in the ventricles of the Brain or the whole ſubſtance thereof, there is a dulneſs of the ſenſes as of the ſight and hearing; the tumor doth not yeeld to the touch, unleſs you uſe ſtrong impreſſion, for then it ſinketh ſomewhat down, eſpecially in infants newly born; who have their skulls almoſt as ſoft as waxe, and the junctures of their Sutures laxe, both by nature, as alſo by accident, by reaſon of the humor contained therein moiſtening and relaxing all the adjacent parts; the humor contained here lifts up the skull ſomewhat more high, eſpecially at the meetings of the Sutures, which you may thus know, becauſe the Tumor being preſſed, the humor flies back into the ſecret paſſage of the Brain. Signs.

To conclude, the pain is more vehement, the whole head more ſwollen, the forehead ſtands ſomewhat further out, the eye is fixt and immoveable, and alſo weeps by reaſon of the ſerous humor ſweating out of the brain.

*Veſalius* writes that he ſaw a girl of two yeers old, whoſe head was thicker than any mans head by this kind of Tumor, and the skull not bony, but membranous, as it uſeth to be in abortive births, and that there was nine pound of water ran out of it. A Hiſtory.

*Abucraſis* tels that he ſaw a child whoſe head grew every day bigger by reaſon of the watery moiſture contained therein, till at length the tumor became ſo great, that his neck could not bear it neither ſtanding nor ſitting, ſo that he died in a ſhort time. I have obſerved and had in cure four children troubled with this diſeaſe, one of which being diſſected after it died, had a brain no bigger than a Tennis Ball. But of a Tumor and humor contained within under the *Cranium*, or Skull, I have ſeen none recover, but they are eaſily healed of an externall Tumor.

Therefore whether the humor lye under the *Pericranium*, or under the muſculous skin of the head, it muſt firſt be aſſayled with reſolving medicines, but if it cannot be thus overcome, you muſt make an inciſion, taking heed of the Temporall Muſcle, and thence preſs out all the humor, whether it reſemble the waſhing of fleſh newly killed, or blackiſh blood, or congealed or knotted blood, as when the tumor hath been cauſed by contuſion; then the wound muſt be filled with dry lint, and covered with double boulſters, and laſtly, bound with a fitting ligature.

## CHAP. II.

### *Of a* Polypus *being an eating diſeaſe in the Noſe.*

THe *Polypus* is a Tumor of the Noſe againſt nature, commonly ariſing from the *Os Ethmoides* or ſpongy bone. It is ſo called, becauſe it reſembles the feet of a Sea *Polypus* in figure, and the fleſh thereof in conſiſtences This Tumor ſtops the Noſe, intercepting and hindering the liberty of ſpeaking and blowing the Noſe. *Celſus* ſaith the *Polypus* is a caruncle of excreſcence, one while white, another while reddiſh, which adheres to the bone of the Noſe, and ſometimes fills the Noſtrils hanging towards the lips, ſometimes it deſcends back through that hole, by which the ſpirit deſcends from the Noſe to the throttle; it grows ſo that it may bee ſeen behind the *Vvulva*, and often ſtrangles a man by ſtopping his breath. There are five kinds thereof, the firſt is, a ſoft membrane, long and thin like the relaxed and depreſſed *Vvulva*, hanging from the middle griſtle of the noſe, being filled with a Phlegmatick and viſcid humor. This in exſpiration hangs out of the noſe, but is drawn in and hid by inſpiration; it makes one ſnaffle in their ſpeech and ſnort in their ſleep. The ſecond hath hard fleſh, bred of Melancholy blood without aduſtion, which obſtructing the noſtrils intercepts the reſpiration made by that part. The third, is fleſh hanging from the Griſtle, round, and ſoft, being the off-ſpring of Phlegmatick blood. The fourth is an hard Tumor, like fleſh, which when it is touched yeelds a ſound like a ſtone; it is generated of Melancholy blood dryed, being ſomewhat of the nature of a *Scirrhus* confirmed and without pain. The reaſon of the name. *Lib.6.Cap.8.* The differences hereof.

The fifth is as it were compoſed of many cancrous ulcers ſpred over the tranſverſe ſurface of the griſtle.

Of all theſe ſorts of *Polypi* ſome are not ulcerated, others ulcerated, which ſend forth a ſtinking and ſtrong ſmelling filth. Such of them as are painfull, hard, reſiſting, and which have alivid, or leaden color, muſt not be touched with the hand, becauſe they favour of the Nature of a *Cancer*, as into which they oft degenerate; yet by reaſon of the pain which oppreſſes more violently, you may uſe the Anodyne medicines formerly deſcribed in a *Cancer*, ſuch as this following. Which of them admit no manuall operation.

℞ *Olei de vitell. ovorum* ℥ ii, *Lytharg. auri, & Tuthiæ præp. an.* ℥ i, *ſucci plat. ſolani an.* ℥ i ß, *Lapid. hæmatit. & camphoræ, an.* ℥ ß. Let them be wrought a long time in a leaden mortar, and ſo make a medicine to be put into the noſtrills. Thoſe which are ſoft, looſe and without An Anodyne.

out pain, are ſometimes curable, being plucked away with an inſtrument made for that purpoſe, or elſe waſted by actuall cauteries put in through a pipe, ſo that they touch not the ſound part; or by potentiall cauteries, as *Egyptiacum* compoſed of equall parts of all the ſimples with vitrioll which hath a faculty to waſte ſuch like fleſh. *Aqua fortis* and oyl of vitrioll have the ſame faculty, for theſe take away a *Polypus* by the roots; for if any part thereof remain it will breed again. But Cauteries and acrid medicines muſt be put into the noſtrills with this Caution, that in the mean time cold repelling and aſtringent medicines be applyed to the noſe and parts about it to aſſwage the pain, and hinder the inflammation. Such as are *Vnguentum de bolo*, and *Vnguentum nutritum*, whites of Eggs beat with Roſe leaves, and many other things of the like nature.

Why it muſt be taken clear away.

## CHAP. III.

### *Of the* Parotides, *that is, Certain ſwellings about the Ears.*

What it is.

The *Parotis* is a Tumor againſt nature, affecting the Glandules and thoſe parts ſeated behind and about the Ears, which are called the Emunctories of the brain; for theſe becauſe they are looſe and ſpongy, are fit to receive the excrements thereof. Of theſe ſome are critical, the matter of the diſeaſe ſomewhat digeſted being ſent thither by the force of nature Others Symptomaticall, the excrements of the brain increaſed in quantity or quality ruſhing thither of their own accord. Such abſceſſes often have great inflammation joyned with them, becauſe the biting humor which flows thither is more vitiated in quality than in quantity. Beſides alſo they often cauſe great pain, by reaſon of the diſtention of the parts indued with moſt exquiſite ſenſe, as alſo by reaſon of a Nerve of the fifth Conjugation ſpred over theſe parts; as alſo of the neighbouring membranes of the brain, by which means the patient is troubled with the Head-ach and all his face becomes ſwoln. Yet many times this kind of Tumor uſeth to be raiſed by a tough, viſcous, and groſs humor.

The differences. Their ſigns and Symptomes.

Prognoſtick.

This diſeaſe doth more grievouſly afflict young men than old; it commonly brings a Feaver and watching. It is difficult to be cured, eſpecially when it is cauſed by a groſs, tough, and viſcid humor, ſent thither by the *Criſis*.

The cure muſt be performed by diet, which muſt be contrary to the quality of the humor in the temper and conſiſtence of the meats. If the inflammation and redneſs be great, which indicate aboundance of blood, Phlebotomy will be profitable, yea very neceſſary. But here we muſt not uſe the like judgment in application of locall medicines as we do in other tumors, as *Galen* admoniſheth us; that is, we muſt not uſe repercuſſives at the beginning, eſpecially if the abſceſs be critical; for ſo we ſhould infringe or foreſlow the indeavors of nature forcibly freeing it ſelf from the morbifique matter. But we muſt much leſs repell or drive it back if the matter which hath flowed thither be venenate, for ſo the reflow thereof to the noble parts would prove mortall. Wherefore the Chirurgeon ſhall rather aſſiſt nature in attracting and drawing forth that humor. Yet if the defluxion ſhall be ſo violent, if the pain ſo fierce that thence there may be fear of watchings and a Feaver, which may deject the powers, *Galen* thinks it will be expedient with many reſolving medicines to mix ſome repelling. Wherefore at the beginning let ſuch a Cataplaſm be applyed.

The cure. *Lib. 3. de comp. med. ſec. Loces. Hip. aph. 21. lib. 1.*

Gentle reſolving medicines.

℞. *Far. hord. & ſem. lin. ana* ℥ ij, *coquantur cum mulſo aut decocto cham. addendo but. recen. & olei cham. ana* ℥ i, *fiat cataplaſma.* And the following oyntment will alſo be good.

℞. *But. recen.* ℥ ij, *olei cham. & lilior. an.* ℥ i, *unguen. de Althea* ℥ ß, *ceræ parum:* make an oyntment to be applyed with moiſt and greaſie wooll, to mitigate the pain: alſo ſomewhat more ſtrong diſcuſſing and reſolving medicines will be profitable, as:

Stronger reſolvers.

℞. *Rad. Althææ & bryon. an.* ℥ ij, *fol. rutæ, puleg. orig. an. m. j, flo. chamæm. melil. an. p. j, coquantur in hydromelite, piſtentur, trajiciantur, addendo farin. fænugræc. orobi. an.* ℥ i, *pul. Ireos, cham. melilot. an.* ℥ ij, *olei aneth. rutac. an.* ℥ i, *fiat cataplaſma.* But if you determine to reſolve it any more, you may uſe *Emplaſtrum Oxycroceum & Melilot-Plaiſter.* If the humor doth there concrete and grow hard, you muſt betake you to the medicines which were preſcribed in the Chapter of the *Scirrhus*; but if it tend to ſuppuration, you ſhall apply the following medicine.

A Ripening medicine.

℞. *Rad. liliorum & ceparum ſub cineribus coct. an.* ℥ iij, *Vitell. ovor. num. ij. axung. ſuillæ & unguent. baſilicon, an.* ℥ i, *farr. ſem. lini* ℥ i ß, *fiat Cataplaſma.* But if the matter do ſo require, let the tumor be opened as we have formerly preſcribed.

## CHAP. IIII.

*Of the* Epulis, *or overgrowing of the fleſh of the Gums.*

THe *Epulis* is a fleſhy excreſcence of the Gums between the teeth, which is by little and little oft-times encreaſed to the bigneſs of an Egge, ſo that it both hinders the ſpeech and eating; it caſts forth ſalvious and ſtinking filth, and not ſeldome degenerates into a *Cancer*, which you may underſtand by the propriety of the colour, pain and other accidents; for then you muſt by no means touch it with your hand. But that which doth not torment the Patient with pain, may be pluckt away; and let this be the manner thereof. What it is. The Symptomes.

Let it be tyed with a double thred, which muſt be ſtraiter twitched untill ſuch time as it fall off; when it ſhall fall away, the place muſt be burnt with a cautery put through a trunk or pipe, or with *Aqua fortis*, or oyl of *Vitriol*, but with great care that the ſound parts adjoyning thereto be not hurt, for if ſo be that it be not burnt, it uſually returns. The Chirurgeons call cure.

I have often by this means taken away ſuch large tumors of this kind, that they hung out of the mouth in no ſmall bigneſs, to the great disfiguring of the face, which when as no Chirurgeon durſt touch, becauſe the fleſh looked livid, I ventured upon becauſe they were free from pain; and by taking them away and caurerizing the place, I perfectly healed them; not truly ſodainly, and at once; for although I burnt the place after diſſection; yet nevertheleſs they ſprung up again, becauſe a certain portion of the bone and ſockets in which the Teeth ſtand faſtened, were become rotten. I have often obſerved ſuch like fleſh by continuance of time to have turned into a griſtly and bony ſubſtance. Wherefore the cure muſt be begun as ſpeedily as may be; for being but little, and having faſtened no deep roots, it is more eaſily taken away, being then only filled with a viſcid humor, which in ſucceſs of time is hardered, and makes the taking away thereof more difficult. Why the cure muſt not be deferred.

## CHAP. V.

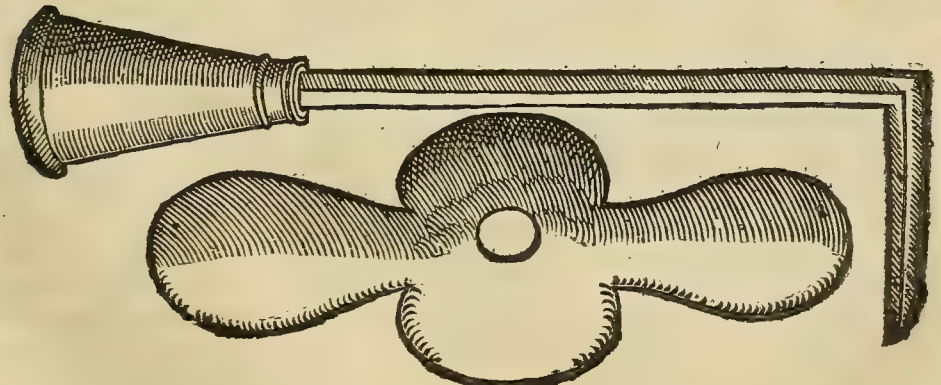
*Of the* Ranula.

THere is oft-times a tumor under the tongue, which takes away the liberty of pronuntiation or ſpeech; wherefore the Greeks call it *Batrachium*, the Latins *Ranula*, becauſe ſuch as have this diſeaſe of the tongue, ſeem to expreſs their minds by croaking rather than by ſpeaking. The Reaſon why it is ſo called.

It is cauſed by the falling down of a cold, moiſt, groſs, tough, viſcid and phlegmatick matter, from the brain upon the tongue, which matter in colour and conſiſtence reſembles the white of an egge, yet ſometimes it looks of a citrin or yellowiſh colour. The Cauſe.

That you may ſafely perform the cure, you muſt open the Tumor rather with a cautery of hot Iron, than with a Knife, for otherwiſe it wil return again. The manner of opening of it muſt be thus. You ſhall get a bended hollow and perforated iron plate with a hole in the midſt, and making the Patient to hold open his mouth, you ſhall ſo fit it, that the hole may be upon the part which muſt be opened. Then there you muſt open it with an hot Iron, for ſo you ſhall hurt no part of the mouth which is whole; but when you are ready to burn it, by thruſting your thumb under the Patients Chin, you may ſomewhat elevate the Tumor whereby you may open it with more certainty; when it is opened you muſt thruſt out the matter contained therein, and then waſh the Patients mouth with ſome barly water, hony, and Sugar of Roſes; for ſo the ulcer will be ſafely and quickly healed. The Cure.

*The delineation of the Iron plate and crooked actuall Cautery.*



## CHAP. VI.

*Of the ſwelling of the Glandules, or Almonds of the throat.*

Why the Glandules are called Almonds. Their uſe.

NAture at the jaws near the roots of the Tongue, hath placed two Glandules oppoſite to one another; in figure and magnitude like to Almonds, whence alſo they have their name; their office is to receive the ſpittle falling down from the brain, both leſt that the too violent falling down of the humor ſhould hinder the tongue in ſpeaking, as alſo that the tongue might alwayes have moiſture, as it were laid up in ſtore, leſt by continuall ſpeaking, it ſhould grow dry and fail. For thus this ſpittle being conſumed by feaveriſh heats, the Patients are ſcarſe able to ſpeak, unleſs they firſt moiſten their tongue by much waſhing of their mouth.

The Cauſe of their tumor.

Theſe Glandules becauſe they are ſeated in a hot and moiſt place, are very ſubject to inflammations; for there flows into theſe oft-times together with the blood, a great quantity of crude, phlegmatick and viſcous humors, whence ariſes a tumor; which is not ſeldome occaſioned by drinking much and that vaporous wine, by too much Gluttony, and ſtaying abroad in the open air.

Symptomes.

Swallowing is painfull and troubleſome to the Patient, and commonly he hath a Feaver. Oft-times the neighbouring Muſcles of the throttle and neck are ſo ſwoln together with theſe Glandules, (that as it uſually happens in the *Squinzy*) the paſſage of the breath and air is ſtopped, and the Patient ſtrangled.

Cure.

We reſiſt this imminent danger by purging and blood-letting, by applying Cupping-Glaſſes to the Neck and ſhoulders, by frictions and ligatures of the extreme parts, and by waſhing and gargling the mouth and throat with aſtringent Gargariſms. But if they come to ſuppuration, you muſt with your inciſion Knife make way for the evacuation of the *Pus*, or Matter; but if on the contrary, theſe things performed according to art, defluxion be increaſed, and there is preſent danger of death by ſtopping and intercepting the breath, for the ſhunning ſo great and imminent danger, the top or upper part of the *Aſpera arteria*, or Weazon muſt be opened, in that place where it uſes to ſtand moſt out; and it may be done ſo much the ſafer, becauſe the jugular veins, and arteries are furtheſt diſtant from this place, and for that this place hath commonly little fleſh upon it. And that the inciſion may be the fitlier made, the Patient muſt be wiſhed to bend his head back, that ſo the Artery be the more eaſily come to by the inſtrument; then you ſhall make an inciſion overthwart way with a crooked knife between two rings (not hurting nor touchiug the griſtly ſubſtance) that is to ſay, the membrane which tyes together the griſtly rings being only cut; you ſhall then judg that you have made the inciſion large enough, when you ſhall perceive the breath to break out by the wound; the wound muſt be kept open ſo long, untill the danger of ſuffocation be paſt; and then it muſt be ſowed up not touching the griſtle: But if the lips of the wound ſhall be hard and callous; they muſt be lightly ſcarified, that ſo they may become bloody for their eaſier agglutination and union, as we ſhall ſhew more at large in the cure of Hare lips. I have had many in cure, who have recovered, that have had their Weazon together with the griſtly rings thereof cut with a great wound, as we ſhall note when we ſhall come to treat of the cure of the wounds of that part.

Extreme diſeaſes muſt have extreme remedies.

How you muſt open the Weazon.

## CHAP. VII.

*Of the inflammation and relaxation in the* Vvula *or* Columella.

What the *Vvula* is, and what the uſe thereof.

THe *Vvula* is a little body, ſpongy and ſomewhat ſharpened to the form of a Pine apple, hanging even down from the upper and inner part of the palat, ſo to break the force of the Air drawn in, in breathing, and carryed to the Lungs, and to be as a quill to form and tune the voyce. It often grows above meaſure by receiving moiſture falling down from the brain, becoming ſharpe by little and little from a broader and more ſwoln *Baſis*. Which thing cauſes many Symptomes; for by the continuall irritation of the diſtilling humor the Cough is cauſed, which alſo hinders the ſleep and intercepts the liberty of ſpeech; but alſo by hindering reſpiration the Patients cannot ſleep unleſs with open mouth: they are exerciſed with a vain indeavouring to ſwallow (having as it were a morſell ſticking in their jaws) and are in danger of being ſtrangled.

The Cauſe of the ſwelling thereof.

Symptomes.

The Cure.

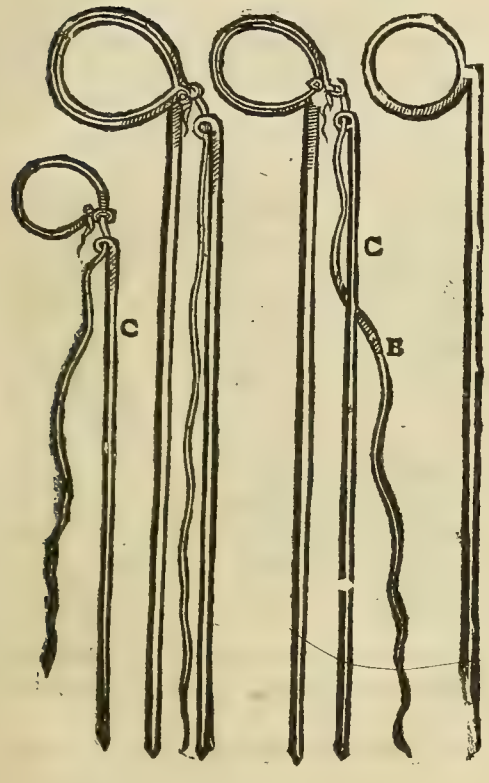
This diſeaſe muſt be reſiſted and aſſailed by purging, bleeding, Cupping, taking of clyſters, uſing aſtringent Gargles, aad a convenient diet; but if it cannot thus be overcome, the cure muſt be tryed by a cauſtick of *Aqua fortis*, which I have divers times done with good ſucces. But if it cannot be ſo done, it wil be better to put to your hand, than through idlenes to ſuffer the patient to remain in imminent and deadly danger of ſtrangling; yet in this there muſt very great caution be uſed; for the Chirurgeon ſhall not judg the *Vvula* fit to be touched with an inſtrument or cauſtick, which is ſwoln with much inflamed, or black blood after the manner of a *Cancer*; but he ſhall boldly put to his hand if it be longiſh, grow

The cure by Chirurgery.

ſmall

ſmall by little and little into a ſharpe, looſe and ſoft point; if it be neither exceeding red, neither ſwolne with too much blood, but whitiſh and without pain. Therefore that you may more eaſily and ſafely cut away, that which redounds and is ſuperfluous, deſire the Patient to ſit in a light place, and hold his mouth open; then take hold of the top of the *Vvula* with your fizers, & cut away as much thereof as ſhal be thought unprofitable. Otherwiſe you ſhall bind it with the inſtrument here-under deſcribed; the invention of this inſtrument is to be aſcribed to *Honoratus Taſtellanus* that diligent and learned man, the Kings Phyſitian ordinary, and the chief Phyſitan of the Queen mother; Which alſo may be uſe in binding of *Polypi* and warts in the neck of the womb.

*The Delineation of conſtrictory rings fit to twitch, or bind the* Columella, *with a twiſted thred.*

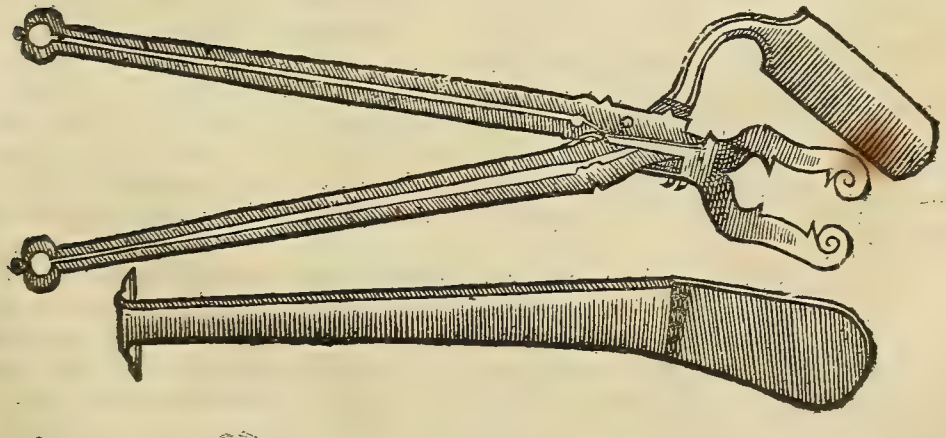



*A.* Shews the ring whoſe upper part is ſomewhat hollow.

*B.* A double waxed thred, which is couched in the hollowneſs of the ring, and hath a running, or looſe koot upon it.

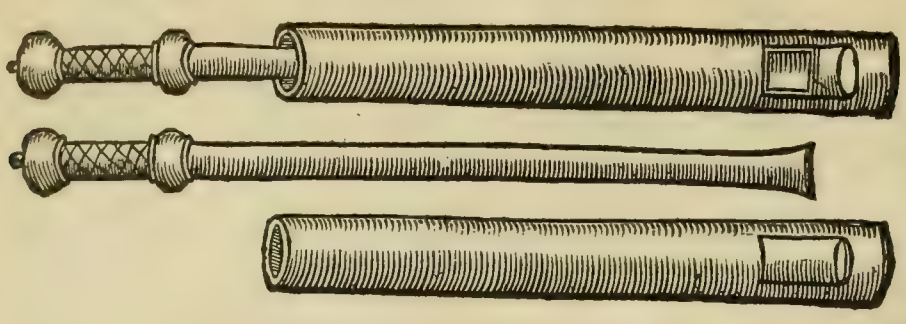
An iron rod, into the eye whereof the forementioned double thred is put, and it is to twitch the *Columella* when as much thereof is taken hold of, as is unprofitable, and ſo to take it away without any flux of blood. When you would ſtraiten the thred, draw it again through this iron rod, and ſo ſtrain it as much as you ſhall think good, letting the end of the thred, hang out of the mouth. But every day it muſt be twitched harder than other, untill it fall away by means thereof, and ſo the part and patient be reſtored to health. I have delineated three of theſe inſtruments, that you may uſe which you will, as occaſion ſhall be offered.

*A Figure of the* Speculum oris, *by which the mouth is held and kept open whilſt the Chirurgeon is buſied in the cutting away or binding the* Vvula.



But if an eating ulcer ſhall aſſociate this relaxation of the *Vvula*, together with a flux of blood, then it muſt be burnt and ſeared with an hot iron, ſo thruſt into a Trunk, or Pipe with an hole in it, that ſo no ſound part of the mouth may be offended therewith.

*A hollow Trunk with a hole in the ſide, with the hot iron inſerted, or put therein.*



## CHAP. VIII.

### *Of the* Angina, *or Squinzy.*

What it is.

THe Squinancy, or Squincy, is a ſwelling of the jaws, which hinders the entring of the ambient air into the weazon, and the vapours and the ſpirit from paſſage forth, and the meat alſo from being ſwallowed. There are three differences thereof. The firſt torments the patient with great pain, no ſwelling being outwardly apparent, by reaſon the Morbifick humor lyes hid behind the almonds or Glandules at the *Vertebræ* of the neck, ſo that it cannot be perceived, unleſs you hold down the tongue with a ſpatula or the *Speculum oris*, for ſo you may ſee the redneſs and tumor there lying hid. The Patient cannot draw his breath, nor ſwallow down meat, nor drink; his tongue, (like a Gray-hounds after a courſe) hangs out of his mouth, and he holds his mouth open that ſo he may the more eaſily draw his breath; to conclude, his voyce is as it were drownd in his jaws and noſe; he cannot lye upon his back, but lying is forced to ſit, ſo to breath more freely: and becauſe the paſſage is ſtopt, the drink flies out at his noſe; the eyes are fiery and ſwollen, and ſtanding out of their orb. Thoſe which are thus affected are often ſodainly ſuffocated, a foam riſing about their mouths.

The differences.

The firſt kind.

The Symptoms.

The ſecond kind.

The ſecond difference is ſaid to be that, in which the tumor appears inwardly, but little or ſcarſe any thing at all outwardly, the tongue, Glandules, and jaws appearing ſomewhat ſwollen.

The third.

The third being leaſt dangerous of them all, cauſes a great ſwelling outwardly, but little inwardly.

The Cauſes.

The Cauſes are either internall, or externall. The externall are a ſtroak, ſplinter or the like thing ſticking in the Throat, or the exceſs of extreme cold, or heat. The internall cauſes are a more plentifull defluxion of the humors either from the whole body of the brain, which participate of the nature either of blood, choler or flegm, but ſeldome of Melancholy. The ſigns by which the kind and commixture may be known, have been declared in the generall treatiſe of tumors. The Squincy it more dangerous, by how much the humor is leſs apparent within and without. That is leſs dangerous which ſhews it ſelf outwardly, becauſe ſuch an one ſhuts not up the wayes of the meat, nor breath. Some dye of a Squincy in twelve houres, other in two, four or ſeven dayes. Thoſe (ſaith *Hippocrates*) which ſcape the Squincy, the diſeaſe paſſes to the lungs, and they dye within ſeven dayes; but if they ſcape theſe dayes, they are ſuppurated; but alſo oftentimes this kind of diſeaſe is terminated by diſappearing, that is, by an obſcure reflux of the humor into ſome noble part, as into the Lungs (whence the *Empyema* proceeds) aud into other principall parts, whoſe violating brings inevitable death; ſometimes by reſolution, otherwiſe by ſuppuration.

*Hip. ſect. 3. prog. 2. Aphor. 10 ſect. 5*

The way of reſolution is the more to be deſired; it happens when the matter is ſmall, and that ſubtle, eſpecially if the Phyſitian ſhall draw blood by opening a vein, and the Patient uſe fitting Gargariſms. A Criticall Squincy divers times proves deadly by reaſon of the great falling down of the humor upon the throttle, by which the paſſage of the breath is ſodainly ſhut up. Broths muſt be uſed made with Capons, and Veal ſeaſoned with Lettuce, Purſlain, Sorrell, and the cold ſeeds.

Dieti

If the Patient ſhall be ſomewhat weak, let him have potched Egges, and Barly Creams, the Barly being ſomewhat boyled with Raiſons in water and Sugar, and other meats of this kind. Let him be forbidden wine, in ſtead whereof he may uſe *Hydromelita*, and *Hydroſachara* that is, drinks made of water and Hony, or water and Sugar as alſo the Syrups of dryed Roſes, of Violets, Sorrell and Lemmons, and others of this kind. Let him avoid too much ſleep. But in the mean time the Phyſitian muſt be carefull of all, becauſe this

diſeaſe

diſeaſe is of their kind, which brook no delayes. Wherefore let the *Baſilica* be preſently opened, on that ſide the tumor is the greater; then within a ſhort time after the ſame day, for evacuation of the conjunct matter, let the vein under the tongue be opened; let cupping-Glaſſes be applyed, ſometimes with ſcarification, ſometimes without, to the neck and ſhoulders, and let frictions and painfull ligatures be uſed to the extreme parts. But let the humor impact in the part be drawn away by clyſters and ſharp ſuppoſitories. Whilſt the matter is in defluxion, let the mouth without delay be waſhed with aſtringent gargariſmes to hinder the defluxion of the humor, leſt by its ſodain falling down it kill the Patient, as it often happens, all the Phyſitians care and diligence notwithſtanding. Therefore let the mouth be frequently waſhed with Oxycrate, or ſuch a gargariſm: R. *Pomorum ſilveſt. nu.* iiij, *ſumach, Roſar. rub. an. m. ſſ. berber.* ʒ ij, let them be all boyled with ſufficient quantity of water to the conſumption of the half, adding thereunto of the wine of foure Pomgranats, ʒ iiij, of *Diamoron* ʒ ij, let it be a little more boyled and make a gargle according to Art. And there may be other Gargariſms made of the waters of Plantain, Night-ſhade, Verjuice, Julep of Roſes and the like. But if the matter of the defluxion ſhall be Phlegmatick, Alum, Pomgranat pill, Cypreſs nuts, and a little Vineger may be ſafely added. But on the contrary, repercuſſives muſt not be outwardly applyed, but rather Lenities, whereby the externall parts may be relaxed and rarified, and ſo the way be open either for the diffuſing or reſolving the portion of the humor. You ſhall know the humor to begin to be reſolved, if the Feaver leave the Patient, if he ſwallow, ſpeak and breath more freely, if he ſleep quietly, and the pain begin to be much aſſwaged. Therefore then natures endeavour muſt be helped by applying reſolved medicines, or elſe by uſing ſuppuratives inwardly and outwardly, if the matter ſeem to turn into *Pus*. Therefore let gargariſms be made of the roots of March-Mallows, Figs, Jujubes, damask Prunes, Dates, perfectly boyled in water. The like benefit may be had by Gargariſms of Cows milk with Sugar, by oyl of ſweet Almonds, or Violets warm, for ſuch things help forward ſuppuration and aſſwage pain; let ſuppurating cataplaſms be applyed outwardly to the neck and throat, and the parts be wrapped with wooll moiſtened with oyl of Lillies. When the Phyſitian ſhall perceive that the humor is perfectly turned into *pus*, let the patients mouth be opened with the *Speculum oris*, and the abſceſs opened with a crooked and long inciſion knife; then let the mouth be now and then waſhed with cleanſing gargles; as R. *Aquæ hordei lib. ſſ. mellis roſ. & ſyr. roſar. ſic. au.* ʒ i, *fiat gargariſma*. Alſo the uſe of *ænomel*, that is, wine and Hony, will be fit for this purpoſe. The ulcer being clenſed by theſe means, let it be cicatrized with a little roch-Alum added to the former gargariſms.

Cure.

Repelling Gargariſms.

Ripening Gargariſms.

Detergent Gargariſms.

*The Figure of an inciſion knife opened out of the haft, which ſerves for a ſheath thereto.*

## CHAP. IX.

### *Of the* Bronchocele, *or* Rupture *of the throat.*

THat which the French call *Goetra*, that the Greeks call *Bronchocele*, the Latins *Gutturis Hernia*, that is, the Rupture of the throat. For it is a round tumor of the throat, the matter whereof coming from within outwards, is contained between the skin and weazon; it proceeds in women from the ſame cauſe as an *Aneuriſma*.

The reaſon of the name.

But this generall name of *Bronchocele* undergoes many differences; for ſometimes it retains the nature of *Melicerides*, other whiles of *Steatoma's*, *Atheroma's* or *Aneuriſma's*, in ſome there is found a fleſhy ſubſtance having ſome ſmall pain; ſome of theſe are ſmall, others ſo great, that they ſeem almoſt to cover all the throat; ſome have a Ciſt, or bag, others have no ſuch thing; all how many ſo ever they be, and what end they ſhall have, may be known by their proper ſigns; theſe which ſhall be curable, may be opened with an actuall or potentiall cautery, or with an inciſion knife. Hence if it be poſſible, let the matter be preſently evacuated, but if it cannot be done at once, let it be performed at divers times, and diſcuſſed by fit remedies, and laſtly, let the ulcer be conſolidated and cicatrized.

The differences.

The Cures

## CHAP. X.

### *Of the Pleuriſie.*

What it is.

THe Pleuriſie is an inflammation of the membrane, inveſting the ribs, cauſed by ſubtile and cholerick blood, ſpringing upwards with great violence from the hollow vein into the *Azygos*, and thence into the intercoſtall veins, and is at length powred forth into the emptie ſpaces of the intercoſtall muſcles, and the mentioned membrane. Being contained there, if it tend to ſuppuration, it commonly infers a pricking pain, a Feaver and difficulty of breathing. This ſuppurated blood is purged and evacuated one while by the mouth; the Lungs ſucking it, and ſo caſting it into the Weazon, and ſo into the mouth, otherwhiles by urine, and ſometimes by ſtool.

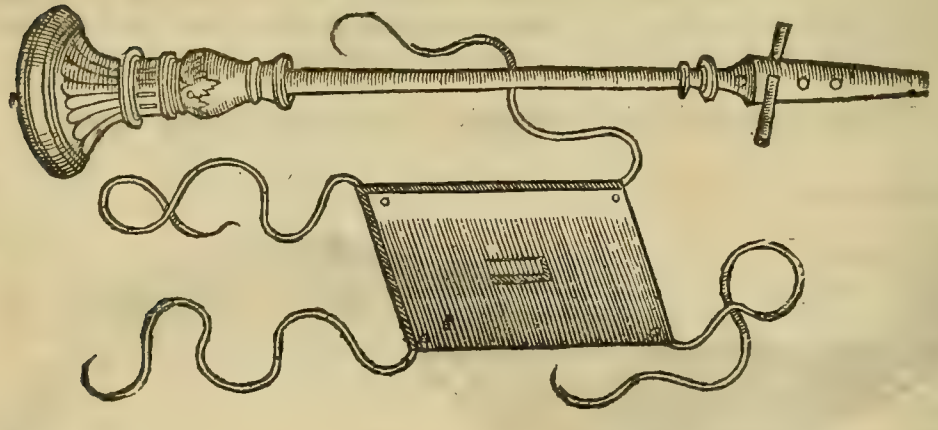
Of a Pleuriſie coming to ſuppuration.

Of the change thereof into an *Empyema*.

Of the aperition of the ſide in an *Empyema*.

But if nature being too weak, cannot expectorate the purulent blood poured forth into the capacity of the cheſt, the diſeaſe is turned into an *Empyema*, wherefore the Chirurgeon muſt then be called, who beginning to reckon from below upwards, may make a vent between the third and fourth true and legitimate ribs; and that muſt be done either with an actual or potentiall cautery, or with a ſharpe knife drawn upwards, towards the back, but not downwards, leſt the veſſels ſhould be violated which are diſſeminated under the rib. This apertion may be ſafely and eaſily performed by this actuall cautery; it is perforated with four holes, through one whereof there is a pin put higher or lower according to the depth and manner of your inciſion: then the point thereof is thruſt through a plate of Iron perforated alſo in the midſt, into the part deſigned by the Phyſitian, leſt the wavering hand might peradventure touch, and ſo hurt the other parts not to be medled withall. This ſame plate muſt be ſomewhat hollowed, that ſo it might be more eaſily fitted to the gibbous ſide, and bound by the corners on the contrary ſide with four ſtrings. Wherefore I have thought good here to expreſs the figures thereof.

*The Figure of an actuall cautery with its plate fit to be uſed in a Pleuriſie.*



But if the patient ſhall have a large body, Cheſt and ribs, you may divide and perforate the ribs themſelves with a Trepan; howſoever the apertion be made, the *pus* or matter muſt be evacuated by little and little at ſeverall times; and the capacity of the Cheſt cleanſed from the purulent matter by a detergent injection of vj ounces of Barley water, and ℥ ij. hony of Roſes, and other the like things mentioned at large in our cure of wounds.

## CHAP. XI.

### *Of the Dropſie.*

What the Dropſie is.

THe Dropſie is a Tumor againſt nature by the aboundance of wateriſh humor, of flatulencies, or Phlegm, gathered one while in all the habit of the body, otherwhiles in ſome part, and that eſpecially in the capacity of the belly between the *Peritonæum* and entrails. From this diſtinction of places and matters there ariſe divers kinds of Dropſies. Firſt, that Dropſie which fils that ſpace of the belly,

The differences thereof.

is either moiſt or dry. The moiſt is called the *Aſcites*, by reaſon of the ſimilitude it hath with a leather bottle, or *Borachio*, becauſe the wateriſh humor is contained in that capacity, as it were in ſuch a veſſell.

The dry is called the *Tympanites*, or Tympany, by reaſon the belly ſwollen with wind founds like a *Tympanum*, that is, a Drum. But when the whole habit of the body is diſtended

with

with a phlegmatick humor,it is called *Anasarca* or *Leucophlegmatia.* In this last kind of Dropsie the lower parts first swell, as which by reason of their site are more subject to receive defluxions, and more remote from the fountain of the native heat; wherefore if you presse them down the print of your finger will remain sometime after;the patients face wil become pale and puffed up, whereby it may be distinguished from the two other kinds of Dropsie. For in them first the belly, then by a certain consequence the thighs and feet do swell. There are besides also particular Dropsies,contained in the strait bounds of certain places, such are the *Hydrocephalos* in the head; the *Bronchocele* in the throat; the *Pleurocele* in the Chest; the *Hydrocele* in the *Scrotum*, or Cod; and so of the rest. Yet they all arise from the same cause; that is, the weakness or defect of the altering or concocting faculties, especially of the liver,which hath been caused by a *Scirrhus*, or any kind of great distemper, chiefly cold, whether it happen primarily, or secondarily by reason of some hot distemper dissipating the native and inbred heat, such a Dropsie is uncurable;or else it comes by consent of some other higher or lower part;for if in the Lungs, Midriff,or Reins there be any distemper,or disease bred,it is easily communicated to the gibbous part of the Liver, by the branches of the hollow vein, which run thither. But if the mischief proceed from the Spleen, Stomach,Mesentery Guts,especially the *jejunum* and *Ileum*, it creeps into the hollow side of the liver by the meseraick veins,and other branches of the *Vena porta* or Gate vein. For thus such as are troubled with the *Asthma*,Ptisick,Spleen,Jaundise,and also the Phrensie,fall into a Dropsie.

The Symptomes.

The Causes.

How divers diseases turn into Dropsies.

Lastly,all such as have the menstruall or hæmorrhoidall blood suppressed or too immoderately flowing contrary to their custome, either overwhelms, diminisheth or extinguisheth the native heat; no otherwise than fire, which is suffocated by too great a quantity of wood ; or dieth and is extinguished for want thereof. We must look for the same from the excrements of the belly or bladder, cast forth either too sparingly or too immoderately : Or by too large quantity of meats too cold and rashly devoured without any order; To conclude,by every default of externall causes , through which occasion,error may happen in diet or exercise.

The *Ascites* is distinguished from the two other kinds of Dropsies, both by the magnitude of the efficient cause,as also by the violence of the Symptoms,as the dejected appetite, thirst,and sweling of the *Abdomen*.And also when the body is moved or turned upon either side,you may hear a sound as of the jogging of water in a vessell half full. Lastly, the humor is diversly driven upwards or downwards, according to the turning of the body and compression of the *Abdomen*; It also causeth various Symptoms by pressure of the parts to which it floweth. For it causeth difficulty of breathing and the cough by pressing the Midriffe; by sweating through into the capacity of the Chest it causeth like Symptoms as the *Empyema*. Besides also the patients often seem, as it were, by the ebbing and flowing of the wateriſh humor, one while to be carried to the skies, and another whiles to be drowned in the water, which I have learnt not by reading of any author, but by the report of the patients themselves. But if these wateriſh humors be fallen down to the lower parts, they suppress the excrements of the guts and bladder by pressing and straitning the passages. When the patient lies on his back the tumor seems lesse, because it is spread on both sides;On the contrary when he stands or sits, it seems greater,for that all the humor is forced or driven into the lower belly,whence he feels a heavinesse in the *Pecten* or share. The upper parts of the body fall away by defect of the blood fit for nourishment in quality and consistence,but the lower parts swel by the flowing down of the serous and wateriſh humor to them.The pulse is little,quick,and hard with tention.

The signs of an *Ascites*.

The Symptoms.

This disease is of the kind of Chronicall or long diseases;wherefore it is scarce,or never cured, especially in those who have it from their mothers womb, who have the Action of their stomach depraved,and those who are cachectick, old; and lastly, all such as have the naturall faculty languishing and faulty.

Prognosticks.

On the contrary, young and strong men,especially if they have no feaver,and finally all who can endure labour, and those exercises which are fit for curing this disease, easily recover,principally if they use a Physitian before the water which is gathered together do putrefie and infect the bowels by its contagion.

## CHAP. XII.

### *Of the cure of the Dropsie.*

THe beginning of the cure must be with gentle and mild medicines; neither must we come to a *Paracentesis* unless we have formely used and tried these. Therefore it shal be the part of the Physitian to prescribe a drying diet,and such medicines as carry away water, both by stool and urine.*Hippocrates* ordains this powder for Hydropick persons. ℞ *Canthar. ablatis capitib. & alis* ʒʃ. *Comburantur in furno, & fiat pulvis*; of which administer two grains in white wine, for nature helped by this, and the like remedies hath not seldome been seen to have cured the Dropsie.

*Hip. lib. 4 de acut. & lib. de intern.*

But

But that we may haſten the cure, it will be available to ſtir up the native heat of the part by appplication of thoſe medicines which have a diſcuſſing force; as bags, baths, ointments, and Emplaiſters. Let bags be made of dry and harſh Bran, Oats, Salt, Sulphur, being made hot, or for want of them, of Sander, or Aſhes often heated.

Bags.

Bathes.

The more effectuall baths are ſalt, nitrous, and ſulphurous waters, whether by nature or art, that is, prepared by the diſſolution of ſalt, niter, and Sulphur; to which if Rue, Marjorom, the leaves of Fennell, and tops of Dill, of *Stœchas*, and the like be added, the buſineſs will goe better forwards. Let the ointments be made of the oyl of Rue, Dill, Baies, and Squills, in which ſome *Euphorbium*, Pellitory of *Spain*, or Pepper have been boiled. Let plaiſters be made of Frankincenſe, Myrrh, Turpentine, *Coſtus*, Bayberries, Engliſh galengall, hony, the dung of Oxen, Pigeons, Goats, Horſes, and the like, which alſo may be applied by themſelves. If the diſeaſe continue, we muſt come to *Sinapiſmes* and *Phœnigmes*, that is, to rubrifying and veſicatory medicines. When the bliſters are raiſed, they muſt be anointed again, that ſo the water may by little and little flow ſo long untill all the humor be exhauſted, and the patient reſtored to health.

Liniments.

Emplaiſters.

Veſicatories.

*Gal. lib. de fac. natur.* 1.

*Galen* writes, the Husbandmen in *Aſia*, when they carried wheat out of the Country into the city in Cars, when they wil ſteal away and not be taken, hide ſome ſtone jugs fill'd with water in the midſt of the wheat; for that will draw the moiſture through the jugs into it ſelf, and encreaſe both the quantity and weight. When certain pragmaticall Phyſitians had read this, they thought that wheat had force to draw out the water, ſo that if any ſick of the Dropſie ſhould be buried in a heap of wheat, it would draw out all the water.

Divers opinions of *Paracenteſis*, or opening of the belly.

But if the Phyſitian ſhall profit nothing by theſe means, he muſt come to the exquiſitly chief remedy, that is, to *Paracenteſis*. Of which becauſe the opinions of the ancient Phyſitians have been divers, we will produce and explain them.

Reaſons againſt it.

Thoſe therefore which diſallow *Paracenteſis*, conclude it dangerous for three reaſons. The firſt is becauſe by pouring out the contained water, together with it, you diſſipate and reſolve the ſpirits, and conſequently the naturall, vitall, an d animall faculties. Another opinion is, becauſe the Liver wanting the water by which formerly it was born up; thence forward hanging down by its weight, depreſſeth and draweth downwards the midriffe and the whole Cheſt, whence a dry cough, and a difficulty of breathing proceed. The third is, becauſe the ſubſtance of the *Peritonæum*, as that which is nervous, cannot be pricked or cut without danger, neither can that which is pricked or cut be eaſily agglutinated and united, by reaſon of the ſpermatick and bloudleſſe nature thereof. *Eraſiſtratus* moved by theſe reaſons condemned *Paracenteſis* as deadly: alſo he perſwaded that it was unprofitable for theſe following reaſons, *viz.* becauſe the water powred forth, doth not take away with it the cauſe of the Dropſie, and the diſtemper and hardneſs of the Liver, and of the other bowels, whereby it comes to paſs that by breeding new waters they may eaſily again fall into the Dropſie. And then the feaver, thirſt, the hot and drie diſtemper of the bowels, all which were mitigated by the touch of the included water, are aggravated by the abſence thereof, being powred forth: which thing ſeemeth to have moved *Avicen* and *Gordonius* that he ſaid none; the other ſaid very few lived after the *Paracenteſis*: but the refutation of all ſuch reaſons is very eaſie.

*Eraſiſtratus* his Reaſons againſt it.

Reaſons for it.

For, for the firſt *Galen* infers, that harmfull diſſipation of ſpirits, aud reſolving the faculties happens, when the *Paracenteſis* is not diligently, and artificially performed. As in which the water is preſently powred forth; truly if that reaſon have any validity, Phlebomy muſt ſeem to be removed far from the number of wholſome remedies, as whereby the blood is poured forth, which hath far more pure and ſubtil ſpirits, than thoſe which are ſaid to be diffuſed and mixed with the Dropſie waters. But that danger which the ſecond reaſon threatens ſhall eaſily be avoided; the patient being deſired to lie upon his back in his bed, for ſo the Liver will not hang down. But for the third reaſon, the fear of pricking the *Peritonæum*, is childiſh: for thoſe evils which follow upon wounds of the nervous parts, happen by reaſon of the exquiſit ſenſe of the part, which in the *Peritonæum* ill affected & altered by the contained water, is either none or very ſmal. But reaſon and experience teach many nervous parts, alſo the very membranes themſelves being far removed from a fleſhy ſubſtance, being wounded admit cure; certainly much more the *Peritonæum*, as that which adheres ſo ſtraitly to the muſcles of the *Abdomen*, that the diſſector cannot ſeparate it from the fleſh, but with much labor. But the reaſon which ſeems to argue the unprofitableneſs of the *Paracenteſis* is refelled by the authority of *Celſus*. I, ſaith he, am not ignorant that *Eraſiſtratus* did not like *Paracenteſis*; for he thought the Dropſie to be a diſeaſe of the Liver, and ſo that it muſt be cured, and that the water was in vain let forth, which the Liver being vitiated, might grow again. But firſt this is not the fault of this bowel alone, and then although the water had his originall from the Liver, yet unleſs the water which ſtayeth there contrary to nature being evacuated, it hurteth both the Liver, and the reſt of the inner parts, whilſt it either encreaſeth their hardneſs, or at the leaſt keepeth it hard, and yet notwithſtanding it is fit the body be cured. And although the once letting forth of the humor profit nothing, yet it makes way for medicines, which while it was there contained, it hindered. But this ſerous, ſalt, and corrupt humor is ſo far from being able to

*Lib.* 3. *cap.* 21.

mitigate

mitigate a feaver and thirſt, that on the contrary it increaſeth them. And alſo it augmenteth the cold diſtemper, whilſt by its abundance it overwhelms and extinguiſheth the native heat. But the authority of *Celius Aurelianus* that moſt noble Phyſitian, though a Methodick, may ſatisfie *Avicen* and *Gordonius*. They, ſaith he, which dare avouch that all ſuch as have the water let out by opening their belly have died, do lie; for we have ſeen many recover by this kind of remedy: but if any died, it happened either by the default of the flow or negligent adminiſtration of the *Paracenteſis*. I will add this one thing which may take all error of controverſies: we unwiſely doubt of the remedy when the patient is brought to that neceſſity, that we can only help him by that means. Now muſt we ſhew how the belly ought to be opened. If the Dropſie happen by fault of the Liver, the ſection muſt be made on the left ſide; but if of the Spleen, in the right: for if the patient ſhould lie upon the ſide which is opened, the pain of the wound would continually trouble him, and the water running into that part where the ſection is, would continually drop, whence would follow a diſſolution of the faculties. The Section muſt be made three fingers bredth below the Navell, to wit, at the ſide of the right muſcle, but not upon that which they call the *Linea Alba*; neither upon the nervous parts of the reſt of the muſcles of the *Epigaſtrium*; that ſo we may prevent pain and difficulty of healing. Therefore we muſt have a care that the patient lie upon his right ſide, if the inciſion be made in the left, or on the left, if on the right. Then the Chirurgeon both with his own hand, as alſo with the hand of his ſervant aſſiſting him, muſt take up the skin of the belly, with the fleſhy pannicle lying under it, and ſeparate them from the reſt; then let him divide them ſo ſeparated with a Section even to the fleſh lying under them, which being done, let him force as much as hee can the divided skin upwards towards the ſtomach, that when the wound, which muſt preſently be made in the fleſh lying there-under, ſhall be conſolidated, the skin by its falling therein, may ſerve for that purpoſe: then therefore let him divide the muſculous fleſh and *Peritonæum* with a ſmall wound, not hurting the Call or Guts.

*Lib. de morb. Ch. cap. de Hydrope.*

The places of the apertion muſt be divers, according to the parts chiefly affected.

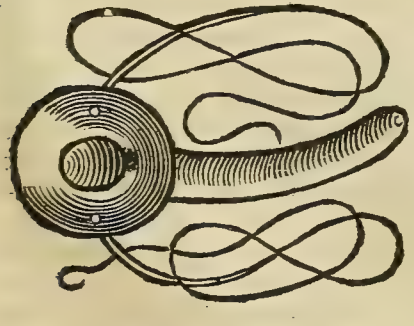
The manner of making apertion.

Then put into the wound a trunk, or golden, or ſilver crooked pipe, of the thickneſs of a Gooſes-quill, and of the length of ſome half a finger. Let that part of it which goes into the capacity of the belly have ſomething a broad head, and that perforated with two ſmall holes, by which a ſtring being faſtened, it may be bound ſo about the body, that it cannot be moved, unleſs at the Chirurgeons pleaſure. Let a ſpunge be put into the pipe, which may receive the dropping humor: and let it be taken out when you would evacuate the water: but let it not be poured out all together, but by little and little for fear of diſſipation of the ſpirits, and reſolution of the faculties, which I once ſaw happen to one ſick of the Dropſie. He being impatient of the diſeaſe and cure thereof, thruſt a Bodkin into his belly, and did much rejoice at the pouring forth of the water, as if he had been freed from the humor and the diſeaſe, but died within a few houres, becauſe the force of the water running forth, could by no means be ſtaied, for the inciſion was not artificially made. But it will not be ſufficient to have made way for the humor by the means aforementioned, but alſo the external orifice of the pipe muſt be ſtopped & ſtrengthned by double cloaths, and a ſtrong ligature, leſt any of the water flow forth againſt our wils. But we muſt note that the pipe is not to be drawn out of the wound, before as much water ſhall be iſſued forth as we deſire, and the tumor requireth; for once drawn forth, it cannot eaſily be put in again, and without force and pain be fitted to the lips of the wound, becauſe the skin and fleſhy pannicle cover it by their falling into the wound of the fleſh or muſcle. But whilſt the water is in evacuation, we muſt have a diligent care of feeding the patient, as alſo of his ſtrength, for if that fail, and he ſeem to be debilitated, the effuſion of the water muſt be ſtaied for ſome daies, which at the length performed acccording to our deſire, the wound muſt be ſo conſolidated that the Chirurgeon beware it degenerate not into a Fiſtula.

A Hiſtory.

A caution for taking out the pipe.

*The figure of a Pipe in form of a Quill, to evacuate the water in Dropſies.*



Others performe this buſineſs after another manner; for making an inciſion, they thruſt through the lips of the wound with a needle and thred: but they take up much of the fleſhie ſubſtance with the needle, leſt that which is taken up ſhould be rent and torn by the forcible drawing of the lips together. Then the thred it ſelf is wrapped up and down over both ends of the needle, ſo thruſt through, as is uſually done in a hare-lip, that ſo the lips of the wound may ſo cloſely cohere, that not a drop of water may get out againſt the Chirurgeons wil. Sometimes ſuch as are cured and healed of the Dropſie, fall into the Jaundiſe, whom I uſually cure after this maner. ℞ *ſterc. anſer.* ʒij, diſſolve it in ʒiij, *vini alb. coletur*: make a Potion, and let it be given two houres before meat.

Another manner of evacuating the water after the apertion.

A medicine for the Jaundiſe.

CHAP.

## CHAP. XIII.

*Of the tumor and relaxation of the Navell.*

The divers cauſes thereof.

THe *Exomphalos* or ſwelling of the Navel, is cauſed by the *Peritonæum*, either relaxed or broken: for by this occaſion oft-times the guts, and oft-times the kal, fal into the ſeat of the Navell, and ſometimes ſuperfluous fleſh is there generated; otherwiſe this tumor is as an *Aneuriſma* by too great a quantity of bloud poured forth in that place: otherwiſe by a flatulent matter, and ſometimes by a wateriſh humor. If the humor be occaſioned by the kall, the part it ſelf will retain his proper colour, that is, the colour of the skin; the tumor will be ſoft and almoſt without pain, and which will reſide without noiſe, either by the preſſure of your fingirs, or of it ſelf when the Patient lieth on his back; but tumor cauſed by the guts, is more unequall, and when it is forced in by the preſſure of your fingers, there is ſuch a noiſe heard, as in the *Enterocele*; but if the tumor proceed of ſuperfluous fleſh it will be harder and more ſtubborn, not eaſily retiring into the body, although the patient lie upon his back, and you preſſe it with your fingers.

Signs thereof occaſioned by the kall.

By the guts.

By fleſh.

By wind.

By a wateriſh humor.

By bruiſed blood.

Which may be cured by Chirurgery, which not.

The cure by Chirurgery.

The tumor is ſofter which proceeds of wind, but which wil not retire into the body, & ſounds under your nail like a taber. If the ſwelling be cauſed by a wateriſh humor, it hath all things common with the flatuous tumor, except that it is not ſo viſible, and without noiſe. If it be from effuſion of blood, it is of a livid colour, but if the effuſed blood ſhall be arteriall, then there are the ſigns of an *Aneuriſma*. Wherefore when the tumor is cauſed by the guts, kall, wind or a wateriſh humor, it is cured by Chirurgery: but not it it proceed from a fleſhy excreſcence or ſuffuſion of blood. The tumor of the navell proceeding from the kall and guts, the Patient muſt lie upon his back to be cured, and then the kall, and guts, muſt with your fingers be forced into their due place: then the skin with which the tumor is circumſcribed muſt be taken up with your fingers, and thruſt through with a needle, drawing after it a double twined and ſtrong thred, then it muſt be ſcarified about the ſides, that ſo it may be the eaſier agglutinated. Then muſt it be thruſt through with a needle three or four times, according to the manner and condition of the diſtention and tumor. And ſo twitch it ſtrongly with a thred, that the skin which is ſo bound may at length fall off together with the ligatures. But alſo you may cut off the skin ſo diſtended even to the ligature, and then cicatrize it, as ſhall be fit. A flatulent tumor of the navell ſhall be cured with the ſame remedies, as we ſhall hereafter mention in the cure of a windy rupture, but the watery may be poured forth by making a ſmall inciſion. And the wound ſhall be kept open, ſo long, untill all the water be drained forth.

## CHAP. XIIII.

*Of the Tumors of the Groins and Cods called* Herniæ, *that is, Ruptures.*

Theſe are only 3. ſorts of Ruptures.

THe ancient Phyſicians have made many kinds of Ruptures, yet indeed there are only three to be called by that name, that is, the *Inteſtinalis*, or that of the guts, the *Zirbalis*, or that of the kall, and that which is mixed of them both. The other kinds of Ruptures have come into this order, rather by ſimilitude, than any truth of the thing: for in them the gut or kall doe not forſake their places.

*Bubonocele.* *Enterocele* and *Epiplocele.*

*Hydrocele.* *Phyſocele.*

*Sarcocele.* *Ciſocele.*

The Cauſes.

The Signs.

The Greeks have given to all theſe ſeverall names, both from the ſeat of the tumor, as alſo from their matter. For thus they have called an unperfect rupture which deſcends not beyond the Groins, nor falls down into the cods, *Bubonocele*: but the compleat which penetrates into the cod, if it be by falling down of the gut, *Enterocele*: if from the kall, *Epiplocele*: it from them both together, they name it *Enteroepiplocele*: but if the tumor proceed from a wateriſh humor, they term it *Hydrocele*: if from wind, *Phyſocele*; if from both, *Hydrophydocele*; if a fleſhy excreſcence ſhall grow about the teſticle, or in the ſubſtance thereof, it is named *Sarcocele*. If the veins interwoven, and divaricated divers wayes ſhall be ſwoln in the cod and teſticles, the tumor obtains the name of a *Ciſocele*. But if the humors ſhall be ſhut up or ſent thither, the name is impoſed upon the tumor, from the predominant humor, as we have noted in the beginning of our Tractate of Tumors. The cauſes are many, as all too violent motions, a ſtroak, a fall from a high place, vomiting, a cough, leaping, riding upon a trotting horſe, the ſounding of trumpets, or ſackbuts, the carrying, or lifting up of a heavy burden, racking, alſo the too immoderate uſe of viſcid and flatulent meats; for all ſuch things may either relax or break the *Peritonæum*, as that which is a thin and extended membrane. The ſigns of a *Bubonocele* are a round tumor in the groin, which preſſed, is eaſily forced in. The ſigns of an *Enterocele* are a hard tumor in the cod, which forced, returneth back and departeth with a certain murmur and pain; but the tumor proceeding of the kall, is lax and feels ſoft like wool, and which is more difficultly forced

in,

in,than that which proceeds from the guts, but yet without murmuring and pain: for the ſubſtance of the guts,ſeeing it is one, and continued to it ſelf,they doe not only mutually ſucceed each other,but by a certain conſequence doe,as in a dance draw each other, ſo to avoid diſtention,which in their membranous body cannot be without pain, by reaſon of their change of place from that which is naturall, into that againſt nature : none of all which can befall the kall,ſeeing it is a ſtupid body,and almoſt without ſenſe, heavy, dull, and immoveable.The ſigns that the *Peritonæum* is broken, are the ſudden increaſe of the tumor, and a ſharp and cutting pain ; for when the *Peritonæum* is only relaxed, the tumor groweth by little and little,and ſo conſequently with ſmall pain ; yet ſuch pain returns ſo often, as the tumor is renewed by the falling down of the gut, or kall, which happens not the *Peritonæum* being broken : for the way being once open,and paſſable to the falling body, the tumor it renewed without any diſtention, and ſo without any pain to ſpeak of. The reſt of the ſigns ſhall be handled in their places. Sometimes it happens that the guts, and kall,do firmly adhere to the proceſſe of the *Peritonæum*,that they cannot be driven back into their proper ſeat. This ſtubborn adheſion happens by the intervention of the viſcid matter, or by means of ſome excoriation cauſed by the rude hand of a Chirurgeon,in too violently forcing of the gut, or kall,into their place. But alſo , too long ſtay of the gut in the cod,and the neglect of wearing a Truſſe, may give occaſion to ſuch adheſion.A perfect and inveterate rupture by the breaking of the proceſs of the *Peritonæum* in men of full growth,never, or very ſeldome admits of cure. But you muſt note, that by great ruptures of the *Peritonæum*, the guts may fall into the cod,to the bigneſs of a mans head , without much pain and danger of life,becauſe the excrements,as they may eaſily enter,by reaſon of the largneſs of the place and rupture,ſo alſo they may eaſily return.

What rupture is uncurable.

## CHAP. XV.

### *Of the cure of Ruptures.*

BEcauſe children are very ſubject to Ruptures,but thoſe truly not fleſhy or varicous,but watry, windy, and eſpecially of the guts, by reaſon of continuall and paintull crying and coughing : Therefore in the firſt place we will treat of their cure. Wherefore the Chirurgeon,called to reſtore the gut which is faln down,ſhall place the child,either on a table, or in a bed,ſo that his head ſhall be low, but his buttocks and thighes higher;then ſhall he force with his hands by little and little, and gently,the gut into his proper place;and ſhall foment the groin with the aſtringent fomentation,deſcribed in the falling down of the womb. Then let him apply this remedy. ℞ *Præſcript. decoctionis quantum ſufficit, farinæ hordei & fabarum,an.* ℥j. *pulver. Aloes, Maſtiches, Myrtyll. & Sarcoco. an.* ℥ß, *Boli Armeni* ℥ij. Let them be incorporated and made a cataplaſme according to Art. For the ſame purpoſe he may apply *Emplaſtrum contra Rupturam*:but the chief of the cure conſiſts in folded clothes,and truſſes,and ligatures artificially made,that the reſtored gut may be contained in its place,for which purpoſe he ſhall keep the child ſeated in his cradle for 30 or 40 dayes, as we mentioned before; and keep him from crying,ſhouting,and coughing. *Actius* bids ſteep paper 3 dayes in water, and apply it made into a ball to the groin,the gut being firſt put up;for that remedy by 3 days adheſion will keep it from falling down. But it will be, as I ſuppoſe,more effectuall,if the paper be ſteeped not in common, but in the aſtringent water , deſcribed in the falling down of the womb. Truly I have healed many by the help of ſuch remedies , and have delivered them from the hands of Gelders , which are greedy of childrens teſticles,by reaſon of the great gain they receive from thence. They by a crafty cozenage, perſwade the Parents, that the falling down of the gut into the cod, is uncurable : which thing notwithſtanding experience convinceth to be falſe, if ſo be the cure be performed according to the forementioned manner, when the *Peritonæum* is only relaxed, and not broken : for the proceſs thereof by which the gut doth fall as in a ſteep way, in progreſs of time and age is ſtraitned and knit together,whilſt alſo in the mean time the guts grow thicker.

To what ruptures children are ſubject.

An aſtringent cataplaſme.

*Ser. 1. cap. 24.*

The craft and covetouſneſs of Gelders.

A certain Chirurgeon who deſerveth credit,hath told me that he hath cured many children as thus:*He* beats a loadſtone into fine powder,and gives it in pap,and then he anoints with hony the groin,by which the gut came out,and then ſtrewed it over with fine filings of iron. He adminiſtred this kind of remedy for ten or twelve dayes : The part , for other things being bound up with a ligature and truſſe as was fitting. The efficacy of this remedy ſeemeth to conſiſt in this;that the loadſtone by a natural deſire of drawing the iron which is ſtrewed upon the groin , joins to it the fleſhy and fatty particles interpoſed between them, by a certain violent impetuoſity,which on every ſide preſſing and bending the looſneſs of the *Peritonæum*, yea verily adjoining themſelves to it, in proceſs of time by a firm adheſion intercept the paſſage and falling down of the gut or kall ; which may ſeem no more abhorring from reaſon, than that we behold the loadſtone it ſelf through the thickneſs of a table,to draw iron after it any way. The ſame Chirurgeon affirmed, that he frequently and happily uſed the following medicine.He burnt into aſhes in an oven red ſnails, ſhut up in an earthen pot, and gave the powder of them to little children in pap , but to thoſe which were bigger,in broth.

Another way to cure ruptures.

The reaſon of this cure.

Another medicine.

But

A notable Hiſtory.

But we muſt deſpair of nothing in this diſeaſe, for the cure may happily proceed in men of full growth, as of fortie year old, who have filled the three dimenſions of the body, as this following relation teſtifies.

There was a certain Prieſt in the Pariſh of *St. Andrews*, called *John Moret*, whoſe office it was to ſing an Epiſtle with a loud voice as often as the ſolemnity of the day, and the thing required. Wherefore ſeeing he was troubled with the *Enterocele*, he came to me, requiring help, ſaying, he was troubled with a grievous pain, eſpecially then, when he ſtretched his voice in the Epiſtle.

When I had ſeen the bigneſs of the *Enterocele*, I perſwaded him to get another to ſerve in his place; ſo having got ten leave of M. *Curio* Clerk, and Deacon of Divinity, he committed himſelf unto me: I handled him according unto Art, and commanded him he ſhould never go without a Truſſe; and he followed my directions. When I met him ſome five or ſix years after, I asked him how he did, he anſwered very wel, for he was wholly freed from the diſeas with which he was formerly troubled; which I could not perſwade my ſelf of, before that I had found that he had told me the truth, by the diligent obſervation of his genitals. But ſome ſix moneths after, he dying of a Pleuriſie. I came to *Curio's* houſe where he died, and deſired leave to open his body, that I might obſerve whether nature had done any thing at all in the paſſage through which the gut fell down: I call God to witneſs, that I found a certain fatty ſubſtance about the proceſſe of the *Peritonæum* about the bigneſs of a little egg, and it did ſtick ſo hard to that place, that I could ſcarce pull it away without the rending of the neighbouring parts. And this was the ſpeedy cauſe of his cure. But it is moſt worthy of obſervation, and admiration, that Nature but a little helped by Art, healeth diſeaſes which are thought incurable. The chief of the cure conſiſts in this, that wee firmly ſtay the gut in its place, after the ſame manner as theſe two figures ſhew.

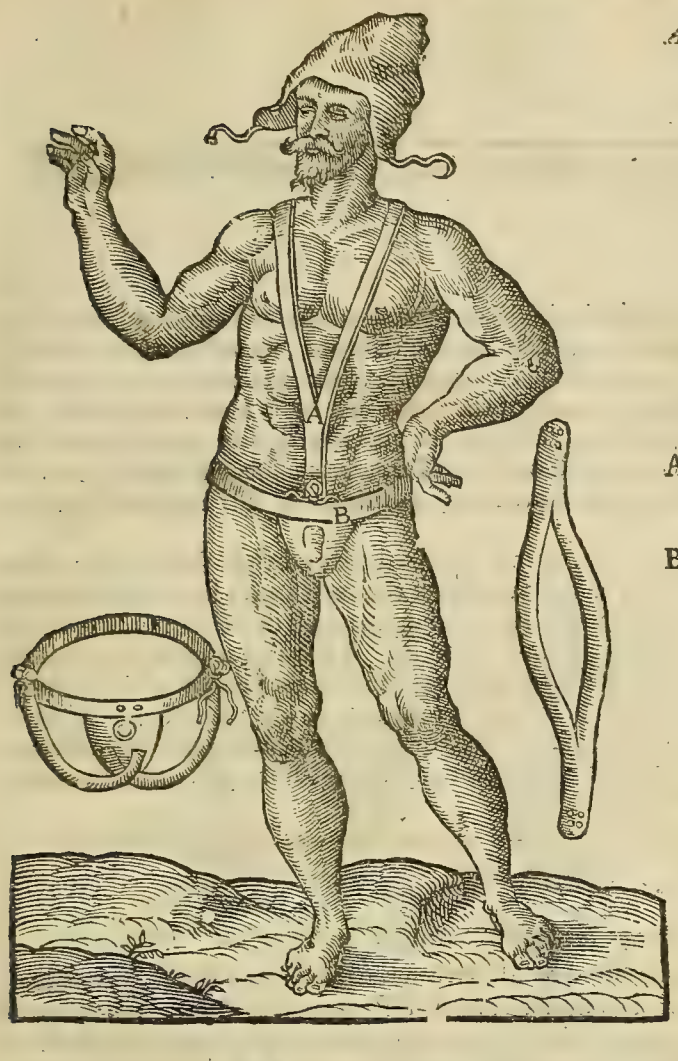
We muſt never deſpair in diſeaſes if ſo be nature be aſſociated by art.

*The figure of a man broken on one ſide, wearing a Truſſe, whoſe bolſter muſt have three Tuberoſities, two on the upper, and one on the lower part; and there muſt be a hollowneſs between them in the midſt, that they may not too ſtraitly preſs the ſhare-bone, and ſo cauſe pain. The manner of ſuch a Truſſe, I found out not long agoe, and it ſeemed better and ſafer than the reſt for to hinder the falling down of the gut and kall.*

A. *Shews the ſhoulderband which is tied before and behind to the girdle of the Truſſe.*
B. *The Truſſe.*
C. *The Cavity left in the midſt of the Tuberoſities.*

In the mean time we muſt not omit diet. We muſt forbid the uſe of all things, which may either relax, dilate, or break the proceſs of the *Peritonæum*, of which I have already treated ſufficiently. Sometimes, but eſpecially in old men, the guts cannot be reſtored into their place, by reaſon of the quantity of the excrements hardned in them: In this caſe they muſt not be too violently forced, but the patient muſt be kept in his bed, and lying with this head low, and his knees higher up; let the following Cataplaſmes be applied.

*Another*




*Another Figure of a man having a Rupture on both ſides, ſhewing by what means, what kind of Truſſe, and what ſhoulder-band he muſt be bound on each groin.*

A. *Sheweth the ſhoulder-band divided in the midſt for the putting through of the head.*

B. *The Truſs, with two bolſters, between which is a hole for putting through the yard. The form of both bolſters ought to be the ſame with the former.*

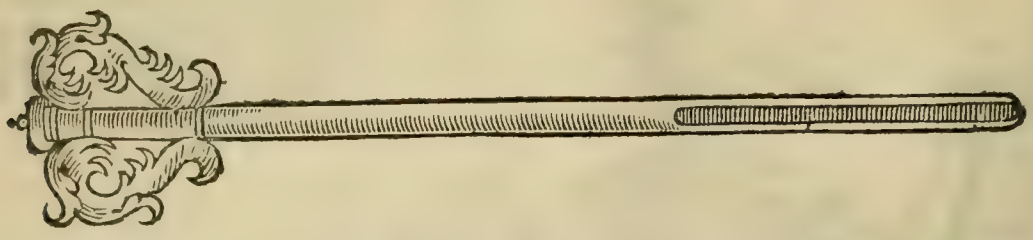
℞ *rad. alth. & lil. ana* ℥ij. *ſeminis lini & fœnugr. an.* ℥ß, *fol. malvæ, viol. & pariet. an. m.* ß. Let them be boiled in fair water, afterwards beaten, and drawn through a ſearſe, adding thereto of new butter without ſalt, and oil of Lillies, as much as ſhall ſuffice. Make a cataplaſme in the form of a liquid pultis. Let it be applied hot to the cod, and bottome of the belly; by the help of this remedy when it had been applied all night, the guts have not ſeldome been ſeen of themſelves, without the hand of a Chirurgeon, to have returned into their proper place. The windineſs being reſolved, which hindered the going back of the excrements into another gut, whereby they might be evacuated and expelled. But if the excrements will not goe back thus, the flatulencies, yet reſiſting and undiſcuſſed, an emollient and carminative clyſter is to be admitted, with a little Chymicall oyl of Turpentine, Dill, Juniper or Fennill. Clyſters of Muſcadine, oyl of Wallnuts, and *Aqua vitæ*, and a ſmall quantity of any the aforeſaid oyls, are good for the ſame purpoſe.

A Cataplaſme to ſoften the excrements.

Chymicall oyl.

It often happens that the guts cannot yet be reſtored, becauſe the proceſs of the *Peritonæum* is not wide enough. For when the excrements are fallen down with the gut into the cod; they grow hard by little and little, and encreaſe by the acceſs of flatulencies cauſed by reſolution, which cauſe ſuch a tumor as cannot be put up through that hole, by which a little before it fell down: whereby it happens that by putrefaction of the matter there contained, come inflammations, and a new acceſs of pain; and laſtly, a vomiting and evacuation of the excrements by the mouth being hindered from the other paſſage of the fundament. They vulgarly call this affect *Miſerere mei*. That you may help this ſymptome, you muſt rather aſſay extreme remedies, than ſuffer the patient to die by ſo filthy and loathſome a death. And we muſt cure it by Chirurgery after this manner following. We wil bind the patient lying on his back, upon a table or bench; then preſently make an inciſion in the upper part of the cod, not touching the ſubſtance of the guts; then we muſt have a ſilver Cane or Pipe, of thet hickneſs of a Gooſe quill, round, and gibbous in one part thereof, but ſomewhat hollowed in the other, as is ſhewed by this following Figure.

*The Figure of the Pipe or Cane.*



We muſt put it into the place of the inciſion, and put it under the production of the *Peritonæum* being cut together with the cod, all the length of the prodnction, that ſo with a ſharp knife we may divide the proceſs of the *Peritonæum*, according to that cavity ſeparated from the guts there contained, by the benefit of the Cane in a right line not hurting the guts. When you have made an indifferent inciſion, the guts muſt gently be put up into the belly with your fingers, and then ſo much of the cut *Peritonæum* muſt be ſowed up, as ſhall ſeem ſufficient, that by that paſſage made more ſtrait, nothing may fall into the cod after it is cicatrized.

But if there be ſuch abundance of excrements hardned, either by the ſtay or heat of inflammation, that that inciſion is not ſufficient to force the excrements into their place, the inciſion muſt be made longer, your Cane being thruſt up towards the belly: ſo that it may be ſufficient for the free regreſs of the guts into the belly. Then ſow it up as is fit, and the way will be ſhut up againſt the falling down of the gut or kall; the proceſs of the *Peritonæum* being made more ſtrait, by reaſon of the future; for the reſt, the wound ſhall be cured according to Art. But before you undertake this work, conſider diligently whether the ſtrength of the Patient be ſufficient, neither attempt any thing before you have foretold, and declared the danger to the Patients friends.

## CHAP. XVI.

*Of the golden Ligature, or the* Punctus Aureus, *as they call it.*

The Chirurgicall cure by the golden Tie.

IF the Rupture will not be cured by all theſe means, by reaſon of the great ſolution of the continuity of the relax'd or broken *Peritonæum*, and the patient by the conſent of his friends there preſent, is ready to undergoe the danger in hope of recovery; the cure ſhall be attempted by that which they call the *Punctus Aureus*, or Golden tie.

For which purpoſe a Chirurgeon which hath a skilful and ſure hand, is to be imployed. He ſhall make an inciſion about the ſhare bone, into which he ſhall thruſt a Probe like to the Cane, a little before deſcribed; and thruſt it long wayes under the proceſs of the *Peritonæum*, and by lifting it up, ſeparate it from the adjoining fibrous, and nervous bodies, to which it adheres; then preſently draw aſide the ſpermatick veſſels, with the *Cremaſter*, or hanging muſcle of the teſticle; which being done, he ſhall draw aſide the proceſſe it ſelf, alone by it ſelf: And he ſhall take as much thereof, as is too lax, with ſmall and gentle mullets, perforated in the midſt, and ſhal with a needle, having five or ſix threds, thruſt it through as neer as he can to the ſpermatick veſſels, and Cremaſter muſcles. But the needle alſo muſt bee drawn again in to the midſt of the remnant of the proceſs, taking up with it the lips of the wound; then the thred muſt be tied on a ſtrait knot, and ſo much thereof muſt be left after the ſection, as may be ſufficient to hang out of the woumd. This thred will of it ſelf be diſſolved by little aud little by putrefaction: neither muſt it be drawn out before that nature ſhall regenerate and reſtore fleſh into the place of the ligature, otherwiſe all our labour ſhall be ſpent in vain.

And laſtly, let the wound be clenſed, filled with fleſh, and cicatrized, whoſe callous hardneſs may withſtand the falling of the gut or kall.

Another manner thereof.

There are ſome Chirurgeons who would perform this golden ligature after another manner. They cut the skin above the ſhare bone where the falling down commonly is, even to the proceſs of the *Peritonæum*, and they wrap once or twice about it, being uncovered, a ſmall golden wire, and only ſtraiten the paſſage as much as may ſuffice to amend the looſneſs of this proceſs, leaving the ſpermatick veſſels at liberty; then they twiſt the ends of the wire twice or thrice with ſmall mullets, and cut off the remnant thereof; that which remains after the cutting, they turn in, leſt with the ſharpneſs it ſhould prick the fleſh growing upon it. Then leaving the golden wire there, they cure the wound like to other ſimple wounds, and they keep the patient ſome fifteen or twenty daies in his bed, with his knees ſomething higher, and his head ſomething lower.

Many are healed by this means; others have fallen again into the diſeaſe by reaſon of the ill twiſting of the wire.

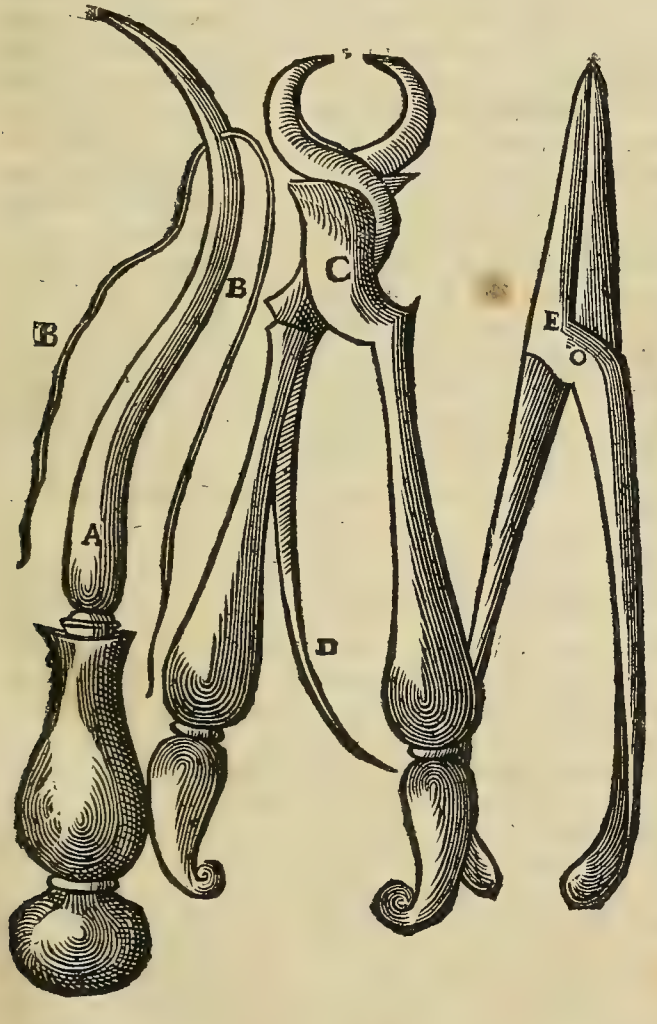
There

There is alſo another manner of this golden tie, which I judg more quick and ſafe, even for that there is no externall body left in that part after the cure. Wherefore they wrap a leaden wire in ſtead of the golden, which comes but once about the proceſs of the *Peritonæum*, then they twine it as much as need requires; that is, not too looſly, leſt it ſhould leave way for the falling down of the body, neither too ſtraitly, leſt a Gangrene ſhould come by hindring the paſſage of the ſpirits and nouriſhment. The ends thereof are ſuffered to hang out; when in proceſs of time, this contraction of the *Peritonæum* ſeems callous, then the wire is untwiſted and gently drawn out. And the reſt of the cure performed according to Art. But let not the Chirurgeon thruſt himſelf upon his work raſhly, without the advice of the Phyſitian, for it diverſe times comes to paſs, that the teſticles are not as yet fallen down into the cod by the too great ſluggiſhneſs of nature, in ſome of a pretty growth, but remains long in the groins, cauſing a tumor with pain, which thing may make a good Chirurgeon beleeve that it is an *Enterocele*. Therefore whilſt he labors by repelling medicines and truſſes to force back this tumor, he encreaſeth the pain, and hinders the falling down of the teſticles into the cod. I obſerved this not long agoe in a Boy, which an unskilful Chirurgeon had long, and grievouſly troubled, as if he had had a rupture: for when I had obſerved that there was but one ſtone in the cod, and knew the boy was never gelt, I bid them caſt away the plaiſters and truſſes, and wiſht his parents that they ſhould ſuffer him to run and leap, that ſo the idling ſtone might be drawn into the cod, which thing by little and little, and without pain, had the event, as I foretold.

The third manner thereof.

A thing to be noted.

A Hiſtory.




A. *Shewes a crooked needle, having an eye not far from the point, through which you may put the golden wire.*

B. B. *The golden wire put through the eye of the needle.*

C. *The mullets or Pincers, to cut away the waſt or ſuperfluous ends of the wire.*

D. *The ſpring of the mullets.*

E. *The mullets to twiſt the ends of the wire together.*

That the reaſon of this affect may be underſtood, we muſt know a man differs from a woman, only in efficacy of heat; but it is the nature of ſtrong heat to drive forth, as of cold to keep in. Hence it is that the ſtones in men hang forth in the cod, but in women they lie hid in the lower belly. Therefore it happens that in ſome males more cold by nature, the teſticles are ſhut up ſome certain time, untill at length they are forc't down into the cod by youthfull heat. But that we may return to our former treatiſe of the cod, although that way of curing ruptures wants not pain and danger, yet it is ſafer than that which is performed by gelding, which by the cruelty thereof expoſes the patient to manifeſt danger of death. For the gelders whilſt they fear leſt when the cure is finiſhed, the relaxation may remain, pull with violence the proceſs of the *Peritonæum* from the parts to which it

adheres, and together with it a nerve of the ſixth conjugation which runs to the ſtones; they offer the ſame violence to the ſpermatick veſſels; by which things enſue great pain, convulſion, efflux of blood, inflammation, putrefaction, and laſtly, death, as I have obſerved in many whom I have diſſected, having died a few daies after their gelding. Although ſome eſcape theſe dangers, yet they are deprived of the faculty of generation for all their life after, for performance whereof, nature hath beſtowed the teſticles, as parts principally neceſſary for the conſervation of mankind. Through which occaſion *Galen* hath not feared to prefer them before the heart; becauſe the heart is the beginning of life, but the teſticles of a better life; for it is far more noble to live well, than ſimply and abſolutely to live; therefore Eunuches degenerate into a womaniſh nature, for they remain without beards, their voice is weak, their courage fails them, and they turn cowards; and ſeeing they are unfit for all humane actions, their life cannot but be miſerable. Wherefore I wil never ſubſcribe to the cutting out of the ſtones, unleſs a *Sarcocele* or Gangrene invade them. But that the way of performing the *Punctus aureus* may be better known, I have thought good here to ſet the inſtruments, by which this operation is performed, before your view.

*Lib. de arte medica.*

*Lib. de ſem.*

*Another more eaſie and ſafe way to reſtore the gut and kall.*

*Lib. 3. cap. 33.* THeodorick and *Guido* have invented another way of performing this operation. They put back into their places the gut and kall being fallen down, the patient being ſo placed, that his thighs are high and his head is ſomewhat low; then they draw aſide the lower portion of the production of the *Peritonæum*, and alſo the ſpermatick veſſels, and cremaſter muſcle to the *Iſchium*; then by applying a cauſtick fitted to the age and diſeaſe, they burn the other part of the proceſs, directly perpendicular to the ſhare bone, where the gut did fall down. Then they pull off the eſchar thus made with a knife even to the quick, then they apply another cauſtick in the ſame place, which may go even to the bone, then procure the falling of this eſchar made on the foreſaid proceſs. And afterwards they heal the ulcer which remains, which preſently contracting ſomewhat a thick *Callus*, ſo keeps up the guts and kall, that it binds them from falling down into the cod. This way of reſtoring the gut and kall, though it be ſafer and more facile; yet the Chirurgeon muſt not attempt it, if the guts or kall ſtick ſo faſt, agglutinated to the proceſs of the *Peritonæum*, that they cannot be ſevered, nor put back into their places (for from the guts ſo burnt and violated, greater miſchief would enſue) if by the broken and too much dilated proceſs, the bodies thereby reſtrained, make an exceeding great tumor by their falling down; if the teſticle yet lying in the groin as in a *Bubonocele*, a kind of *Enterocele*, being not yet deſcended into the *Scrotum* or cod; if the patients be not come to ſuch age as they can keep themſelves from ſtirring, or hold their excrements whiles the operation is performed.

## CHAP. XVIII.

*Of the cure of other kinds of Ruptures.*

EPiplocele is the falling down of the kall into the groin, or cod, it hath the ſame cauſes as an *Enterocele*. The ſigns have been explained. It is not ſo dangerous, nor infers a conſequence of ſo many evill ſymptomes, as the *Enterocele* doth, yet the cure is the ſame with the other.

What a *Hydrocele* is.

*Hydrocele* is a wateriſh tumor in the cod; which is gathered by little and little between the membranes encompaſſing the teſticles, eſpecially the *Dartes* & *Erythroides*; it may be called a particular dropſie, for it proceeds from the ſame cauſes, but chiefly from the defect of native heat. The ſigns are a tumor encreaſing ſlowly without much pain, heavy, and almoſt of a glaſſie clearneſs, which you may perceive by holding a candle on the other ſide, by preſſing the cod above, the water flows down, and by preſſing it below, it riſes upwards, unleſs peradventure in too great a quantity it fills up the whole capacity of the cod, yet it can never be forced or put up into the belly as the kall or guts may, for oft-times it is contained in a ciſt or bag; it is diſtinguiſhed from a *Sarcocele*, by the ſmoothneſs and equality thereof. The cure muſt firſt be tried with reſolving, drying and diſcuſſing medicines, repeated often before, and in the Chapter of the dropſie; this which follows I have often tried and with good ſucceſs.

The ſigns.

The Cure.

A medicine to draw forth the contained matter.

℞ *Vng. comitiſſæ, & deſiccat. rub. an.* ℥ij. *malaxentur ſimul*, and make a medicine for your eaſe. The water by this kind of remedy is digeſted and reſolved, or rather dried up, eſpecially if it be not in too great quantity. But if the ſwelling, by reaſon of the great quantity of water, will not yeeld to thoſe remedies, there is need of Chirurgery; the cod and membranes wherein the water is contained, muſt be thruſt through with a Seton, that is, with a large three-ſquare pointed needle, thred with a skean of ſilk; you muſt thruſt your needle preſently through the holes of the mullets made for that purpoſe, not touching the ſubſtance of the Teſticles. The skean of thred muſt be left there, or removed twice

or

or thrice a day, that the humor may drop down, and be evacuated by little and little. But if the pain be more vehement by reason of the Seton, and inflammation come upon it, it must be taken away, and neglecting the proper cure of the disease, we must resist the symptoms.

Some Practitioners use not a Seton, but with a Razor, or incision knife, they open the lower part of the cod, making an incision some half fingers bredth long, penetrating even to the contained water; alwaies leaving untouched the substance of the testicles and vessels, and they keep the wound open, untill all the water seems evacuated; truly by this only way the cure of a watery rupture whose matter is contained in a cist, is safe, and to be expected; as we have said in our Treatise of Tumors in generall.

The *Pneumatocele*, is a flatulent tumor in the cod, generated by the imbecillity of heat residing in the part. What a *Pneumatocele* is.

It is known by the roundness, lenity, renitency and shining. It is cured by prescribing a convenient diet, by the application of medicines which resolve and discusse flatulencies, as the seeds of Annis, Fennell, Fænugreek, *Agnus Castus*, Rue, *Origanum*, other things set down by *Avicen* in his Treatise of Ruptures. I have often used with good success for this purpose, *Emplastrum Vigonis cum Mercurio*; and *Emplastrum Diacalcitheos*, dissolved in some good wine, as Muscadine, with oyl of Bayes. The Cure.

A *Sarcocele* is a tumor against nature, which is generated about the stones by a scirrhous flesh. Grosse and viscid humors breed such kind of flesh, which the part could not overcome and assimilate to it self; whence this over-abundance of flesh proceeds like as Warts do. *Varices*, or swoln veins often associate this tumor; and it increases with pain. It is known by the hardness, asperity, inequality, and roughness. It cannot be cured but by amputation or cutting it away; but you must diligently observe, that the flesh be not grown too high, and have already seized upon the groin, for so nothing can be attempted without the danger of life. What a *Sarcocele* is. The Signs. Prognosticks.

But if any may think, that he in such a case may somewhat ease the patient by the cutting away of some portion of this same soft flesh, he is deceived. For a *Fungus* will grow, if the least portion thereof be but left, being an evill sure worse than the former; but if the tumor be either small or indifferent, the Chirurgeon taking the whole tumor, that is, the testicle tumified through the whole substance, with the process incompassing it, and adhering thereto on every side, and make an incision in the cod, even to the tumor; then separate all the tumid body, that is, the testicle from the cod; then let him thrust a needle with a strong thred in it, through the midst of the process, above the region of the swoln testicle; and then presently let him thrust it the second time through the same part of the process; then shall both the ends of the thred be tied on a knot, the other middle portion of the *Peritonæum* being comprehended in the same knot. This being done, he must cut away the whole process with the testicle comprehended therein. But the ends of the thred, with which the upper part of the process was bound, must be suffered to hang some length out of the wound, or incision of the cod. Then a repercussive medicine shall be applied to the wound, and the neighbouring parts with a convenient ligature. And the cure must be performed as we have formerly mentioned. The Cure.

The *Cirsocele* is a tumor of veins dilated, and woven with a various and mutuall implication about the testicle and cod, and swelling with a grosse and melancholy bloud. The causes are the same as those of the *Varices*. But the signs are manifest. What a *Cirsocele* is.

To heal this tumor, you must make an incision in the cod, the bredth of two fingers to the *Varix*. Then you must put under the varicous vein, a needle having a double thred in it, as high as you can, that you may bind the roots thereof: then let the needle be again put after the same manner about the lower part of the same vein, leaving the space of two fingers between the ligatures. But before you bind the thred of this lowest ligature, the *Varix* must be opened in the midst, almost after the same manner as you open a vein in the arm to let bloud: That so this grosse blood causing a tumor in the cod, may be evacuated as is usually done in the cure of the *varices*. The wound that remains shall be cured by the rules of Art after the manner of other wounds: Leaving the threds in it, which presently fall away of themselves. To conclude then, it being grown callous, especially in the upper part thereof, where the vein was bound, it must be cicatrized, for so afterwards the bloud cannot be strained or run that way. The Cure.

*Hernia Humoralis* is a tumor generated by the confused mixture of many humors in the cod, or between the tunicles which involve the testicles, often also in the proper substance of the testicles. It hath like causes, signs and cure as other tumors. While the cure is in hand, rest, trusses, and fit rowlers to sustain and bear up the testicles, are to be used. *Hernia Humoralis.*

## CHAP. XVIII.

*Of the falling down of the Fundament.*

The cauſes.

WHen the muſcle called the *Sphincter* which ingirts the Fundament is relaxed, then it comes to paſſe that it cannot ſuſtain the right gut. This diſeaſe is very frequent to Children by reaſon of the too much humidity of the belly; which falling down upon that muſcle mollifieth and relaxeth it or preſſeth it down by an unaccuſtomed weight, ſo that the muſcles called *Levatores Ani*, or the lifters up of the Fundament, are not ſufficient to bear up any longer. A great bloudy flux gives occaſion to this effect. A ſtrong endevour to expell hard excrements, the *Hæmorrhoids*, which ſuppreſſed do over-load the right gut, but flowing relax it: Cold, as in thoſe which go without breeches in winter, or ſit a long time upon a cold ſtone, a ſtroak or fal upon the holy-bone, a palſie of nerves which go from the Holy-bone to the muſcles the lifters up of the fundament: the weight of the ſtone being in the bladder.

The cure.

That this diſeaſe may be healed, we muſt forbid the Patient too much drinking, too often eating of broth, and from feeding on cold fruits. For locall medicines the part muſt be fomented with an aſtringent decoction made of the rinds of Pomegranats, galls, myrtles, knotgraſſe, ſhepherds purſe, cypreſs nuts, alum, and common ſalt boiled in ſmiths water or red wine. After the fomentation, let the gut be anointed with oyl of Roſes or myrtles, and then let it be gently put by little and little into its place, charging the child if he can underſtand your meaning, to hold his breath. When the gut ſhall be reſtored, the part muſt be diligently wiped leſt the gut fall down again by reaſon of the ſlipperineſs of the unction. Then let the powder preſcribed for the falling down of the womb be put into the fundament as far as you can: Then you muſt ſtraitly bind the loins with a ſwath, to the midſt whereof behind let another be faſtned which may be tied at the *Pubes* coming along the *Perinæum*, ſo to hold up the fundament; the better to contain it in its place, a ſponge dipt in the aſtringent decoction. The patient if he be of ſufficient age to have care of himſelf, ſhall be wiſhed when he goes to ſtool that he ſit upon two pieces of wood being ſet ſome inch a ſunder, leſt by his ſtraining he thruſt forth the gut together with the excrement; but if he can do it ſtanding, he ſhall never by ſtrayning thruſt forth the gut.

*Hippocrates* his cure.

But if the gut cannot by the preſcribed means be reſtored to its place, *Hippocrates* bids that the Patient hanging by the heels be ſhaken, for ſo the gut by that ſhaking will return to his place: but the ſame *Hippocrates* wiſheth to anoint the fundament, becauſe that remedy having a drying faculty, hath alſo power to reſolve the flatulent humors without any acrimony, by reaſon of which the gut was the leſs able to be contained in his place.

## CHAP. XIX.

*Of the Paronychia.*

What the *Paronychia* is.

THe *Paronychia* or *Panaris* is a tumor in the ends of the fingers, with great inflammation, coming of a malign and venemous humor, which from the bones by the *Perioſteum* is communicated to the tendons and nerves of that part which it affecteth, whereof cruell ſymptoms do follow, as pulſifique pain, a feaver, reſtleſneſs, ſo that the affected through impatiency of the pain are variouſly agitated like thoſe tormented with Carbuncles: for which cauſe *Guido* and *Johannes de Vigo* judge this diſeaſe to be mortall; wherefore you muſt provide a skilfull Phyſitian for the cure of this diſeaſe, which may appoint convenient diet, purging and blood-letting. In the mean time the Chirurgeon ſhal make way for the virulent and venenate matter, by making inciſion in the inner part of the finger, even to the bone alongſt the firſt joint thereof; for *Vigo* ſaith there is not a preſenter remedy, if ſo be that it be quickly done and before the maturation of the matter; for it vindicates the finger from the corruption of the bone and nerves, and aſſwages pain, which I have often and happily tried immediately at the beginning, before the perfect impreſſion of the virulencie.

*Lib. cap. 4. tract.*

But the wound being made you muſt ſuffer it to bleed well, then preſently let him dip his finger in ſtrong and warm vinegar, in which ſome treakle being diſſolved may draw forth the virulencie. But to appeaſe the pain, the ſame remedies muſt be applyed to the affected part as are uſed in Carbuncles, as the leaves of Sorrell, Henbane, Hemlock, Mandrake roaſted under the Embers and beaten in a Morter with new *Vnguentum Populeon*, or oyl of Roſes or new butter without ſalt: for ſuch like medicines alſo helpe forward ſuppuration: whilſt by their coldneſs, they repreſs the extraneous heart affecting the part; and ſo ſtrengthen the native heat being the author of ſuppuration: which reaſon moved the ancient Phyſitians to uſe ſuch medicines in a Carbuncle: but if by reaſon of the fearfulneſs of the patient, or unskilfulneſſe of the Chirurgeon,

no

no inciſion being made,a Gangren and Sphacel ſhall poſſeſs the part, it remains that you cut off with your cutting mullets as much of the part as ſhall be corrupt, and perform the reſt of the cure according to Art. Yet it doth not ſeldome happen that there may be no need to cut off ſuch a finger, becauſe it being corrupted together with the bone by little and little diſſolve into a purulent or rather ſanious or much ſtinking filth. But in this affect there is often cauſed an Eſchar by the aduſtion of putredinous heat, and ſuperfluous fleſh indued with moſt exquiſite ſenſe groweth underneath it,which muſt in like manner be cut off with the Mullets that the part may receive comfort,the pain being aſſwaged by the copious effuſion of blood.

## CHAP. XX.

### *Of the ſwelling of the Knees.*

AFter long and dangerous diſeaſes there oftentimes ariſe Tumors in the knees, and alſo in Plethorick bodies and ſuch as have evill juyce after labours and exerciſe. This kind of diſeaſe is frequent becauſe the humor eaſily falls into the part which hath been heated by labour. But if ſuch tumors follow long diſeaſes, they are dangerous and difficult to cure,and therefore not to be neglected,for bitter pain accompanieth them,becauſe the humor falling thither diſtends the Membranes,which being many involve the part; beſides that this humor participateth of a certain virulent aud malign quality whether it be cold or hot,when it hath ſetled into thoſe parts,being ſuch as we find in the pains of the joynts,and in the bitings of venemous creatures. *Gal. com ad ſent. 1 ſer. 4. lib. 6. Epid. Gal. Com. ad ſent. 67. ſect. 2. prog.*

For the cure if the tumor be cauſed by blood,let a ſlender and a refrigerating diet be appointed,and phlebotomy for the revulſion of the antecedent cauſe; divers locall medicines ſhall be uſed according to the variety of the four times.But for to aſſwage the pain, *Anodyne*, or mitigating medicines ſhall be appointed: of all which we have ſufficiently treated in the Chapter of the cure of a Phlegmon. The Cure.

And becauſe theſe parts are of exact ſenſe,if there be neceſſity to open the tumor,yet muſt we not do it raſhly or unconſiderately,for fear of pain and evill accidents.

This kind of tumor is oft-times raiſed by wind contained there; in which caſe the Chirurgeon muſt be very provident, that he be not deceived with the ſhew of flowing of the humor, which he ſeems to perceive by the preſſure of his fingers, as if there were matter and humor contained therein,and ſo be brought to open the tumor. For the wind breaking forth in ſtead of the humor, cauſeth evill ſymptomes by reaſon of the ſection raſhly made in a part ſo ſenſible.

But if wateriſh humors ſhall tumefie the part,the body ſhall firſt be purged with medicines purging flegm: And then inciding, attenuating, rarifying, diſcuſſing and very drying locall medicines ſhall be uſed.

Of which we have abundantly ſpoken in the Chapter of the *Oedema*. Yet this humor divers times lyes deep between the whirl bone and the joint, which cauſeth it that it can be diſcuſſed and reſolved by reaſon of the weakneſs of the part and defect of heat, ſo that the adventitious humor often moves and excludes the bones from their ſeat. As I have obſerved it to have happened to many.

In which cauſe Irrigations of red wine falling ſomething high,whereby the force of the medicine may enter and more eaſily penetrate,are much commended.

## CHAP. XXI.

### *Of the* Dracunculus.

ICannot chuſe, but explain in this place thoſe things which may be ſpoken of that kind of tumor againſt nature, which by the ancients is called *Dracunculus*. The matter & reaſon of theſe hath been variouſly handled by divers Authors, ſo that hitherto we have nothing written of them to which we may by right and with good reaſon adhere as a firm foundation of their eſſence. It is not as yet ſufficiently known what *Dracunculi* are.

For firſt, for *Galens* opinion, *Lib. 6. de Loc. affect. cap.* 3. The generation,ſaith he, of thoſe hairs which are evacuated by the urine is worthy no leſs admiration than the *Dracunculi*, which as they ſay,in a certain place of *Arabia* breed in the legs of men being of a nervous nature and like worms in colour and thickneſs.

Therefore ſeeing I have heard many who have ſaid they have ſeen them, but I my ſelf never ſaw them, I cannot conjecture any thing exactly neither of their originall nor eſſence.

*Paulus Ægineta* writes that the *Dracunculi* are bred in *India*, and the higher parts of *Ægypt*, like worms in the muſculous parts of mans body,that is,the arms, thighs,and legs, and alſo creep by the intercoſtall muſcles in children with a manifeſt motion. *Lib 4. cap. ult.*

But whether they be creatures indeed,or only have the ſhape of creatures, they muſt be cured with a hot fomentation, by which the *Dracunculus* raiſed to a juſt tumor, may put forth it ſelf,and be pluckt away peece-meal with the fingers: alſo ſuppurating Cataplaſms The cure out of *Ægineta*.

may

may be applyed,compoſed of water, hony,wheat and barly meal.

*Cap. 21. lib. 4. ſent. 3. tract. 3.* *Avicen* being various,having no certainty whereon to reſt, inclineth one while to this, and another while to that opinion: for now he ſpeaketh of the *Dracunculi* as of creatures, then preſently of a matter and humor ſhut up in a certain place; for the reſt he rightly delivers the cure and eſſence of this diſeaſe,as we ſhall afterwards ſhew.

*Lib. 14. cap. ult.* *Aetius* ſaith, the *Dracunculi* are like worms, and that they are found ſometimes great, ſometimes ſmall,and that their generation is not unlike to that of flat worms, which are bred in the guts,for they move under the skin,without any trouble,but in proceſs of time, the place becomes ſuppurate about the end of the *Dracunculus*. The skin openeth, and the head thereof is thruſt forth.

But if the *Dracunculus* be pulled it cauſeth great grief; eſpecially if it be broken by too violent pulling. For that which is left cauſeth moſt vehement pain. Wherefore that the creature may not run back,the arm muſt be bound with a ſtrong thred, and this muſt be done every day, that the *Dracunculus* going forward by little and little,may be intercepted by this binding,but not broken off.

The Cure out of *Aetius*.

The place muſt be bathed with *Aqua Mulſa* and oyl in which wormwood or ſouthernwood hath been boyled,or ſome other of thoſe medicines which are preſcribed for the worms of the belly.

But if the *Dracunculus* going forward of its one accord, may be eaſily drawn forth, we muſt do nothing elſe: but if it be turned to ſuppuration we muſt not leave off the Cataplaſms, the *Aqua Mulſa* and anointing with oyl: It was uſuall with him after the taking away of the Cataplaſms,to apply *Emplaſtrum e Baccis Lauri*: but when it is come to ſuppuration the skin muſt be opened long wayes,and the *Dracunculus* ſo laid open muſt be taken away, but the skin muſt be filled with lint, and the reſt of the ſuppurative cure uſed, ſo that the creature being ſuppurated and drawn forth, the wound may be incarnated and cicatrized.

*Tractat. 7. cap. 34.* *Rhaſis* writeth,that when the part is lifted up into a bliſter,and the vein haſteneth its egreſs,it is good for the Patient to drink the firſt day half a dram of *Aloes*, the next day a whole dram,the third day two drams; and in like manner the place affected muſt be fomented with *Aloes*, for ſo that which lies hid will break forth: that which ſhall come forth muſt be rolled in a pipe of lead,which may equal the weight of a dram ſo that it may hang down,for the vein drawn by the weight will come more forth; and when that which ſhall come forth is grown much and long, it muſt be cut off, but not by the root, but ſo that a portion thereof may remain and hang forth,to which the leaden pipe may be faſtened,for otherwiſe it would withdraw it ſelf into it skin and its lurking hole, and ſo cauſe a putrid and malign ulcer.

The cure out of *Rhaſis*.

Therefore we muſt gently meet with this diſeaſe, and the vein muſt be drawn by little and little out of the body untill it be all come forth that no worſe thing happen: but if by chance it ſhall happen that as much of the vein as ſhall be come forth ſhall be cut off by the roots, then the Ulcer muſt be opened long wayes with an inciſion knife, and that ſo that whatſoever remains thereof may be wholly taken away. Then for ſome dayes the part muſt be anointed with butter untill whatſoever of ſuch a ſubſtance adheres,being conſumed with putrefaction ſhall flow away. Then the Ulcer muſt be cured with ſarcotick things.

His opinion of them.

Therefore *Rhaſis* thus in the ſame text expreſſeth the ſame thing by divers names, and armed with Iron and Lead,he comes to the cure thereof, as if he meant to encounter with ſome fierce beaſt.

*Soranus* his opinion.

*Soranus* the Phyſitian,who lived in the times of *Galen*,was of a quite contrary opinion,as *Paulus Ægineta* in the place being before cited,relates of him;as who denies the *Dracunculus* to be a living creature,but only a condenſation of a certain ſmall nerve,which ſeems both to the Phyſitians and Patients to have ſome motion under the skin.

Wherefore *Soranus* ſeems to have come neerer the truth than the reſt, but yet not ſo, as throughly to underſtand,and know the eſſence of this diſeaſe, as we ſhall demonſtrate hereafter.

*Epiſt. 2. lib. 7.* *Manardus* writes, that the *Dracunculi* are generated of evill and unlaudable blood, groſs, hot,and melancholick,or of aduſt phlegm very much dryed.

*Gorræus* a moſt learned Phyſitian of our time, *Lib. de Definitionib. medic.* denyes any of our Phyſitians to be able to ſay any thing of the *Dracunculi*,becauſe it is a diſeaſe ſo unfrequent in theſe our regions, that it is ſcarſe ever met withall in practice.

The Author of the Introduction,and Medicinall definitions,defines the *Dracunculus* to be a diſeaſe very like the *Varices*; then cauſing great pain,when increaſing by little,and little, it begins to be moved: Therefore to be cured after the ſame manner, and by the ſame method of Section and inciſion,as the *Varices* are. Which thing chiefly ſeems to have moved *Guido* to refer this kind of diſeaſe to the *Varices* in his Tractate of Impoſtumes, becauſe it hath the ſame cauſe,and is healed with the ſame remedy as the *Varices*.

But ſeeing that divers names have been impoſed upon this diſeaſe by ſeverall writers,yet they have all expreſſed it by the name of a vein, for it is called by *Avicen* and *Guido*, *Vena Meden*,becauſe it is a diſeaſe frequent in the City *Medina*: by *Albucraſis*,*vena civilis*. *Haliabas* hath

hath called it *vena famoſa*; others have called it *Vena Cruris* or the leg vein. Truly the contrariety of ſo many opinions repugnant not only amongſt themſelves, but alſo with themſelves, eaſily argueth how little certainty they had of the eſſence of this diſeaſe, who have written of it unto us: To which alſo this may be added, that none of the latter Phyſitians have written any things thereof. For although *Jacobus Dalechampius* a man moſt converſant in every part of Phyſick, hath written much of this matter in his book of the French Surgery which he ſet forth ſome years ago: Yet he hath left us no amplier teſtimony of his induſtry, than that he was very diligent in collecting the writings of the Ancients concerning this thing, interpoſing no judgment of his own, the better to aſſure us of a thing ſo controverted.

But my modeſty cannot ſo contain me, but that I ſhall chuſe rather to undergoe the cenſure of being thought too daring, than (as much as in me lyeth) to ſuffer this queſtion of the *Dracunculi* to remain longer ambiguous and undecided. Therefore for the preſent, I will thus order it, that refuting the opinions of the Ancients I may ſtrengthen by certain reaſons, my opinion of the eſſence and cure of this diſeaſe.

For firſt, that *Dracunculi* are no living things, nor like unto worms, nor of like generation as the flat worms of the belly, which was the opinion of *Aetius*, is eaſie to diſprove both by his writings, as alſo by reaſon it ſelf. For he writes that the broad worm which he cals *Taenia*, is as it were a certain *Metamorphoſis* or tranſmutation of the inner tunicle of the ſmal guts into a quick living and movable body. *Aetius* opinion confuted. *Tract. 3. ſermo 1 cap. 40.*

But no man ever ſaid, neither will he confeſs that the *Dracunculi* hath the material cauſes of their beginning from the Tunicle of the vein, in which they are cloſed, or from the fibers of a nervous body, to which often they are adjoined; but much leſs from the skin under which they lye, may they draw their materiall cauſes of their originall.

Moreover, neither can there be any generation of worms, nor of any other living creatures whatſoever, who have their originall from putrefaction, unleſs by the Corruption of ſome matter, of whoſe better and more benign part, nature by the force of the vitall heat, produceth ſome animate body, as *Ariſtotle* teacheth. Wherefore to produce this effect, it is fit the matter ſhould have ſuch a diſpoſition to putrefaction as is required for the generation of ſuch a creature as they would make the *Dracunculus* to be: It is fit the helping cauſes ſhould concur as aſſiſtants to the principals in the action. And it is meet the place ſhould be opportune or fit. *4. Meteorolog.*

But there may be many cauſes found which may give life to the *Dracunculi*, for by the common conſent of all thoſe who have written of them, their generation proceeds from an humor melancholick, terreſtriall and groſs, which by its qualities both by the firſt coldneſs and dryneſs, as alſo by the ſecond, that is Acidity, is not only thought moſt unfit of all others for putrefaction, but alſo is judged to reſiſt putrefaction, as that which is cauſed by heat and ſuperfluous heat humidity. Beſides if the materiall cauſe of this diſeaſe ſhould be from an humor putrefying and turning by putrefaction into ſome living creature, it was fit there ſhould be ſtench alſo, as being an unſeparable accident of putrefaction, for thus the excrements in the guts of which the worms are generated, do ſmell or ſtink. Naturall Melancholik humors is moſt unapt to putrefie. Stink an unſeparable companion to putrefaction.

Therefore that which exhales from their bodies which are troubled with the *Dracunculi*, ſhould be ſtinking, as it happens to thoſe ſick of the *Pthiriaſis* or *Lowſie-evill*. But none of thoſe who have delivered the accidents or ſymptomes of the *Dracunculi* are found to have made mention hereof. But for the efficient cauſe whereby ſo great heat may be raiſed in the places next under the skin, by the efficacy whereof ſuch a creature may be formed of a matter melancholick and moſt unapt to putrefie, as they make the *Dracunculus* to be who fain our bodies to be fruitfull monſters; eſpecially ſeeing the ſurface of the body is continually ventilated by the ſmall Arteries ſpread under the skin, as alſo by the benefit of inſenſible tranſpiration, and breathed with the coolneſs of the air incompaſſing us. But now the materiall and efficient cauſes being defective, or certainly very weak, for the generation of ſo laborious an effect; what coadjutory cauſe can yeeld aſſiſtance? Can the humidity of meats? for thoſe bodies which are fed with warm and moiſt meats, as milk, Cheeſe, Summer fruits, uſually breed worms, as we are taught by experience in children. What things uſually breed worms.

But on the contrary *Avicen* in the place before cited writeth, that meats of a hot and dry temper chiefly breed this kind of diſeaſe, and that it is not ſo frequent to moiſt bodies and ſuch as are accuſtomed to the Bath, moiſt meats and wine moderately taken. But whether may the condition of the air of thoſe regions in which it is as it were, an Endemiall diſeaſe, confer any thing to the generation of ſuch creatures? Certainly for this purpoſe a cloudy, warm and thick air, ſuch as uſeth to be at the beginning of the Spring when all the places reſound with frogs, toads and the like creatures breed of putrefaction.

But on the contrary *Jacobus Dalechampius* by the opinion of all the Phyſitians that have written of the *Dracunculi*, writes that this diſeaſe breeds in the dry and Sun burnt regions of *India* and *Arabia*; but if at the leaſt that part of our body which is next under the skin ſhould have any opportunity to ingender and nouriſh ſuch creatures, they may be judged to have written that the *Dracunculus* is a living creature with ſome probability. But if there be no opportunity for generation in that place, nor capacity for the nouriſhment of ſuch like *Cap. 83. Chir. Gallic.*

clea-

creatures as in the guts, if that region of the body be breathed upon with no warmneſs and ſmothering heat, if it be defiled with none of thoſe groſs excrements, as the guts uſually are, but only by the ſubtiller exhalation, which have an eaſie and inſenſible tranſpiration by the pores of the skin, which may ſeem to be a juſt cauſe of ſo monſtrous and prodigious an effect: but we ſhall little profit with theſe engines of reaſon unleſs we caſt down at once all the Bulwarkes, with which this old opinion of the *Dracunculi* may ſtand and be defended.

For firſt they ſay, why have the ancients expreſſed this kind of diſeaſe by the name of a living thing, that is, of a *Dracunculus* or little Serpent? I anſwer, becauſe in Phyſick names are often impoſed upon diſeaſes rather by ſimilitude than from the truth of the thing; for the confirmation whereof, the examples of three diſeaſes may ſuffice, that of the *Cancer*, *Polypus*, and *Elephas*. For theſe have thoſe names not becauſe any Crab, Polypus, or living Elephant may breed in the Body by ſuch like diſeaſes, but becauſe this by its propagation into the adjacents parts repreſents the feet and claws of a Crab; the other repreſents the fleſh of the Sea-Polypus in its ſubſtance; and the third becauſe ſuch as have the Leproſie have their skin wrinckled, rough, and horrid with ſcales and knots, as the skin of a living Elephant. So truly this diſeaſe of which we now enquire ſeems by good right to have deſerved the name *Dracunculus*, becauſe in its whole conformation, colour, quality and production into length and thickneſs it expreſſeth the image of a Serpent. But whence, will they ſay, (if it be without life) is that manifeſt motion in the matter? We reply that the humor the cauſe of this diſeaſe is ſubtill and hot, and ſo runs with violence into the part whence it may ſeem to move. But when the *Dracunculi* are ſeparated, why do they put their heads as it were out of their holes? We anſwer, in this the Ancients have been very much deceived, becauſe after the ſuppuration the ulcer being opened, ſome nervous body being laid bare, thruſt forth and ſubjected it ſelf to the ſight, which by the convulſive and ſhaking motion might expreſſe the crooked creeping of a Serpent. But they will ſay, pain happens not unleſs to things indued with ſenſe & life, but this *Dracunculus* when he is drawn too violently, eſpecially if he be broken, thereby will cauſe extream pain: We do anſwer, that the concluſion doth not follow & is of no conſequence, for theſe pains happen not unleſſe when the unprovident Surgeon draws or puls in ſtead of the *Dracunculus* ſome nervous or membranous body ſwoln and repleat with an aduſt humor, whence there cannot but be great pain that part being puld which is the author of ſenſe. But it is childiſh to ſay that the *Dracunculus* feels, for that it cauſeth ſharp pains to the living body in which it is. Therefore that at laſt we may determin ſomething of the nature, eſſence and generation of theſe *Dracunculi*, I dare boldly affirm it is nothing elſe but a tumor and abſceſs bred from the heat of the blood in a venenate kind. Such blood driven by the expulſive faculty through the veins to the Externall parts, eſpecially the limits, that is, the Arms and Legs, cauſeth a tumor round and long often ſtretched from the joynt of the ſhoulder even to the wriſt, or from the groin even to one of the Ankles with tenſion, heat, renitency, pricking pain, and a feaver. But this tumor is ſome while ſtretched forth ſtreight, otherwhiles into oblique and crooked tumors, which hath been the cauſe that many taken with this kind of diſeaſe, and having their limbs ſo infolded as with the twinings of a Serpent, would ſay they had a Serpent. I have thus much to ſay of the *Dracunculi*, eſpecially of thoſe of our own country.

Why they are called *Dracunculi*.

The Cure.

For the cure, it is not unlike to the cure of a Phlegmon ariſing from a defluxion, for here alſo in like manner the remedies muſt be varied according to the four times of the diſeaſe, and the ſame rule of diet, phlebotomy and purging muſt be obſerved, which is before preſcribed in the cure of a Phlegmon.

So the *Malum pilare* in *Ariſtotle cap.* 11. *lib.* 7. *hiſt. animal.*

The mention of the *Dracunculi* cals to my memory another kind of Abſceſſe, altogether as rare. This our *French* men name *Cridones*, I think *a Crinibus*. i. from hayrs: it chiefly troubles children and pricks their backs like thorns. They toſs up and down being not able to take any reſt. This diſeaſe ariſeth from ſmall hairs which are ſcarſe of a pins length, but thoſe thick & ſtrong. It is cured with a fomentation of water more than warm, after which you muſt preſently apply an oyntment made of hony and wheaten flower; for ſo theſe hairs lying under the skin are allured and drawn forth; and being thus drawn, they muſt be plucked out with ſmall mullets. I imagine this kind of diſeaſe was not known to the ancient Phyſitians.

## *The End of the Eighth Book.*

# OF VVOUNDS IN GENERALL.

## The Ninth Book.

### CHAP. I.

*What a wound is, what the kinds and differences thereof are, and from whence they may be drawn, or derived.*

A Wound is a ſolution of Continuity, cauſed by a ſtroak, fall, or bite, newly done, bloody and with putrefaction and filth. They alſo call it a new ſimple ulcer; for the ſolution of continuity happens to all parts of the body; but according to the diverſity of parts, it hath divers names amongſt the Greeks. For in the fleſh it is called *Helcos*, in the bone *Catagma*, in the nerve *Spaſma*, in the ligament *Thlaſma*, in the veſſels *Apoſpaſma*, in the Muſcles *Regma*: and that ſolution of continuity, which happens in the veſſels, their mouths being open, is termed *Anaſtomaſis*, that which happens by eroſion, *Aneuroſis*; that which is generated by ſweating out and tranſcolation, *Diapedeſis*. That theſe may be the more eaſily underſtood, I have thought good to deſcribe them in the following table.

What a Wound properly is.

Divers appellations of wounds according to the varieties of the parts.

### A Table of the differences of Wounds.

The differences of wounds are drawn or taken
- From the nature of the parts in which they are made or happen. But theſe parts are
  - Either ſimilar, and theſe,
    - Either ſoft, as the
      - Glandules,
      - Fleſh,
      - Fat,
      - Marrow.
    - Or hard, as
      - A Bone,
      - A Griſtle.
    - Or of a middle conſiſtence, as the
      - Membranes,
      - Ligaments,
      - Fibers,
      - Veſſels,
      - Nerves,
      - Veins,
      - Arteries.
  - Or Organicall, and theſe either
    - Principall, as the
      - Brain,
      - Heart,
      - Liver, to which ſome add the Womb and Teſticles.
    - Or ſerving the principall, as
      - The Weaſon,
      - Lungs,
      - gullet,
      - Stomach,
      - Guts,
      - Bladder.
    - Or neither
      - The Ears,
      - Noſe,
      - Feet,
      - hands, and other of the ſame kind.

from

- *From their proper essence, from whence they are called,*
  - *Simple wounds* — *When there is no complication of any other disease or symptome besides.*
  - *Or compound,* — *When there is a complication of some one or more diseases, which unlesse they be taken away, wee must not hope for to cure the wound.*
- *From their quantity according to which they are called,*
  - *Great,* — *Long, Broad, Deep.*
  - *Indifferent,*
  - *Little,* — *Short, Narrow, Superficiary.*
- *From their figure, according to which they are named,*
  - *Streight,*
  - *Oblique,*
  - *Cornered.*

## CHAP. II.

### *Of the causes of Wounds.*

Divers denominations from their causes,

ALL things which may outwardly assail the body with force and violence, may be counted the causes of wounds; which are called green, and properly bloody. These things are either animate, or inanimate. The animate, as the bitings, and prickings of beasts. The Inanimate, as the stroak of an arrow, sword, club, gun, stone, a dagger, and all such like things.

From the variety of such like causes, they have divers names: for those which are made by sharp and pricking things are called punctures: those caused by cutting things, are called wounds or gashes: and those which are made by heavy and obtuse things are named Contusions, or wounds with contusions.

## CHAP. III.

### *Of the signs of Wounds.*

A caution for making reports of Wounds.

WOunds are first known by sight, and by the signs drawn from thence. The Chirurgeon ought first and chiefly, to consider, what wounds are curable, and what not; what wounds will scarse admit of cure, and what may be easily cured; for it is not the part of a prudent Chirurgeon, to promise cure in a deadly or dangerous and difficult wound; lest he may seem to have killed him, whom not the unsufficiency of the Art, but the greatnesse of the wound hath slain.

But when the wound is dangerous, but yet without despair of recovery, it belongs to him to admonish the Patients friends which are by, of the present danger, and doubtfull state of the wound, that if Art shall be overcome by the greatnesse thereof, he shall not be thought ignorant of the Art, neither to have deceived them.

A Jugling cheating Chirurgeon.

But as this is the part and duty of a good and prudent Chirurgeon, so it is the trick of a cheating and jugling knave, to enlarge small wounds, that so he may seem to have done a great cure, when it is nothing so.

But it is agreeable to reason, that the Chirurgeon professing the disease easie to be cured, will think himself in credit bound by such promises and his duty, and therefore seek all means for the quick recovery of the Patient; lest that which was of its own nature smal, may by his negligence become great. Therefore it is expedient, he should know what wounds are to be accounted great.

*Lib. 4. Meth. cap. 6. 1.*

This (as *Galen* saith) is three wayes to be known; The first is by the magnitude and principality of the part affected; for thus the wounds of the Brain, Heart, and of the greater vessels, though small of themselves, yet are thought great. Then from the greatnes of the solution of continuity; for which cause wounds may be judged great, in which much of the substance of the part is lost in every dimension, though the part be one of these which are accounted servile. Then from the malignity; through which occasion the wounds of the joints are accounted great, because for the most part, they are ill conditioned.

Wounds are called great out of three respects.

## CHAP. IIII.

*Of Prognosticks to be made in Wounds.*

THose Wounds are thought dangerous, wherein any large nerve, vein, or Artery are hurt. From the first there is fear of convulsion, but from the other large effusion of the veinous, or arterious blood, whence the powers are debilitated; also these are judged evill, which art upon the arm pits, groins, lesks, joynts and between the fingers; and likewise those which hurt the head or tail of a Muscle. They are left dangerous of all other which wound only the fleshy substance. But they are deadly which are inflicted upon the Bladder, Brain, Heart, Liver, Lungs, Stomach and small guts. But if any Bone, Gristle, Nerve or portion of the cheek or prepuce, shall be cut away, they cannot be restored. Contused wounds are more difficult to cure, than those which are only from a simple solution of continuity; for before you must think to heal them up, you must suppurate and clense them; which cannot be done in a short time. Wounds which are round and circular are so much the worse; for there can be no unity unless by an angle, that is, a meeting together of two lines, which can have no place in round wounds, because a circular figure consists of one oblique line. Besides, wounds are by so much thought the greater, by how much their extreams and lips are the further disjoyned, which happens to round Wounds. Contrary to these are cornered wounds or such as are made alongst the fibers, as such as may be easily healed.

What wounds are dangerous.

What least dangerous. What deadly. *Hip. apbor.* 19. *Lib.* 6.

Why round Wounds are difficult to heal.

Wounds may be more easily healed in young men, than in old, because in them nature is more vigorous, and there is a greater plenty of fruitfull, or good blood, by which the losse of the flesh may be the better and more readily restored, which is slowlier done in an old body, by reason their blood is smaller in quantity and more dry, and the strength of nature more languid.

Wounds received in the Spring, are not altogether so difficult to heal as those taken in Winter or Summer. For all excesse of heat and cold is hurtfull to them, it is ill for a convulsion to happen upon a Wound, for it is a sign that some Nervous body is hurt; the braine suffering together therewith, as that which is the originall of the Nerves. A Tumor comming upon great Wounds is good; for it shews the force of nature is able to expell that which is harmfull, and to ease the wounded part. The organicall parts wholly cut off cannot again be united: because a vitall part once severed and plucked from the trunk of the body cannot any more receive influence from the heart as from a root without which there can be no life. The looséd continuity of the Nerves, Veins, Arteries, and also the bones, is sometimes restored, not truly, and as they say, according to the first intention, but by the second, that is, by reposition of the like, but not of the same substance. The first intention takes place in the fleshy parts by converting the Alimentary bloud into the proper substance of the wounded part. But the second, in the spermatique parts in which the lost substance may be repaired by interposition of some heterogeneous body, which nature, diligent for its own preservation, substitutes in place of that which is lost: for thus the body, which restores and agglutinates, is no bone but a *Callus*, whose originall matter is from an humor somewhat grosser than that, from whence the bones have their originall and beginning.

*Hip. lib. de ulcer. Hip. aph.* 66. *lib.* 5.

What a *Callus* is and whence it proceeds.

This humor, when it shall come to the place of the fracture, agglutinateth the ends of the bones together, which otherwise could never be so knit by reason of their hardness. The bones of children are more easily and speedily united by reason of the pliantness of their soft and tender substance. Lastly we must here admonish the Chirurgeon, that small Wounds and such as no Artisan will judg deadly, do divers times kill by reason of a certain occult and ill disposition of the wounded, and incompassing bodies; for which cause we read it observed by *Hippocrates*, that it is not sufficient for the Physitian to performe his duty, but also externall things must be rightly prepared, and fitted.

Small and contemptible Wounds often prove mortall.

*Aphor.* 1. *sect.* 1.

## CHAP. V.

*Of the Cure of Wounds in generall.*

THe Chirurgeon ought for the right cure of wounds to propose unto himself the common and generall indication: that is, the uniting of the divided parts, which indication in such a case is thought upon and known even by the vulgar: for that which is dis-joyned desires to be united, because union is contrary to division. But by what means such union may be procured, is only known to the skilfull Artisan. Therefore we attain unto this chief and principall Indication by the benefit of nature as it were the chief Agent, and the work of the Chirurgeon as the servant of nature. And unless nature shall be strong, the Chirurgeon shall never attain to his conceived, and wished for end: therefore that he may attain hereto, he must perform five things; the first is, that if there be any strange bodies, as peeces of Wood, Iron, Bones, bruised flesh, congealed blood, or the like, whether they have come from without, or from within the body, and shall be by accident fastened or stuck in the wound, he must take them away, for otherwise there is no union to be expected.

The generall Indication of Wounds.

Five things necessary for uniting wounds.

Another is,that he join together the lips of the Wound;for they cannot otherwiſe be agglutinated and united.The third is,that he keep cloſe together the joined lips. The fourth, that he preſerve the temper of the wounded part,for the diſtemper remaining,it is impoſſible to reſtore it to its unity.The fifth is,that he correct the accidents,if any ſhall happen,becauſe theſe urging,the Phyſitian is often forced to change the order of the cure.

All ſtrange and externall bodies muſt be taken away,as ſpeedily as is poſſible,becauſe they hinder the action of nature intending unity, eſpecially if they preſs or prick any Nervous body,or Tendon,whence pain or an Abſceſs may breed in any principall part,or other ſerving the principall.

Yet if by the quick and too haſty taking forth of ſuch like bodies there be fear of cruell pain or great effuſion of blood, it will be far better to commit the whole work to nature than to exaſperate the Wound by too violent haſtening.

For nature by little and little will exclude,as contrary to it, or elſe together with the *Pus*,what ſtrange body ſoever ſhall be contained in the wounded part. But if there ſhall be danger in delay,it will be fit the Chirurgeon fall to work quickly,ſafely, and as mildly as the thing will ſuffer: for effuſion of blood,ſwooning,convulſion and other horrid ſymptomes,follow upon the too rough and boyſtrous handling of Wounds, whereby the Patient ſhall be brought into greater danger than by the Wound it ſelf.

Therefore he may pull out the ſtrange bodies,either with his fingers,or with inſtruments, fit for that purpoſe: but they are ſometimes more eaſily and ſometimes more hardly pulled forth,according as the body infixed is either hard or eaſie to be found or pulled out.Which thing happens according to the variety of the figure of ſuch like bodies, according to the condition of the part it ſelf,ſoft,hard,or deep,in which theſe bodies are faſtened more ſtraitly or more looſly: and then for fear of inferring any worſe harm,as the breaking of ſome Veſſell: but how we may perform this firſt intention, and alſo the expreſſion of the inſtruments neceſſary for this purpoſe, ſhall be ſhown in the particular treaties of Wounds made by Gun-ſhot,Arrows and the like.

Ligatures and Sutures for to conjoyn and hold together the lips of wounds.

But the Surgeon ſhal attain to the ſecond and third ſcope of curing Wounds by two and the ſame means,that is,by ligatures & ſutures:which notwithſtanding before he uſe he muſt well obſerve whether there be any great flux of blood preſent,for he ſhall ſtop it if it be too violent;but provoke it,if too ſlow,(unleſs by chance it ſhall be powred out into any capacity or belly)that ſo the part freed from the ſuperfluous quantity of blood may be leſs ſubject to inflammation.Therefore the lips of the Wound ſhall be put together,and ſhall be kept ſo joined by ſuture and ligatures: Not truly of all, but only of thoſe which both by their nature,and magnitude,as alſo by the condition of the parts in which they are, are worthy and capable of both the remedies. For a ſimple and ſmall ſolution of continuity, ſtands only in need of the Ligature which we cal incarnative,eſpecially,if it be in the Arms or Legs,but that which divides the Muſcles tranverſly,ſtands in need of both Suture and Ligature; that ſo the lips which are ſomewhat far diſtant from each other, and as it were drawn towards their beginning, and ends may be conjoyned.

If any portion of a fleſhy ſubſtance by reaſon of ſome great cut ſhall hang down, it muſt neceſſarily be adjoyned and kept in the place by Suture. The more notable and large Wounds of all the parts,ſtand in need of Suture,which do not eaſily admit a Ligature, by reaſon of the figure and ſite of the part in which they are, as the Ears, Noſe, Hairy-ſcalp, Eye-lids,lips,Belly and Throat.

Three ſorts of Ligatures. Whatan incarnative Ligature is.

There are three ſorts of Ligatures,by the joint conſent of all the Ancients. They commonly call the firſt, a Glutinative, or Incarnative; the ſecond Expulſive, the third Retentive. The Glutinative or Incarnative is fit for ſimple,green and yet bloody Wounds. This conſiſts of two ends, and muſt ſo be drawn, that beginning on the contrary part of the Wound, we may ſo go upwards,partly croſſing it, and going downwards again, we may cloſely joyn together the lips of the Wound. But let the Ligature be neither too ſtrait, leſt it may cauſe inflammation or pain; nor too looſe, leſt it be of no uſe, and may not well contain it.

What an expulſive.

The Expulſive Ligature is fit for ſanious and fiſtulous Ulcers,to preſs out the filth contained in them. This is performed with one Rowler, having one ſimple head; the beginning of binding muſt be taken from the botome of the *Sinus*, or boſome thereof; and there it muſt be bound more ſtraihgtly, and ſo by little and little going higher, you muſt remit ſome thing of that rigour, even to the mouth of the Ulcer, that ſo (as we have ſaid) the ſanious matter may be preſſed forth.

What the retentive.

The Retentive Ligature is fit for ſuch parts as cannot ſuffer ſtrait binding, ſuch are the Throat,Belly,as alſo all parts oppreſſed with pain; For the part vexed with pain, abhorreth binding.The uſe thereof, is to hold to locall Medicines. It is performed with a Rowler,which conſiſts ſomewhiles of one, ſome whiles of more heads. All theſe Rowlers ought to be of linnen,and ſuch as is neither too new,nor too old, neither too courſe, nor too fine.Their breadth muſt be proportionable to the parts to which they ſhal be applyed; the indication of their largeneſs, being taken from their magnitude, figure and ſite. As we ſhall ſhew more at large in our Tractates of Fractures and Diſlocations.

What the rowlers muſt be made of.

The

The Chirurgeon ſhall perform the firſt ſcope of curing Wounds, which is of preſerving the temper of the Wounded part, by appointing a good order of diet by the Preſcript of a Phyſitian, by uſing univerſall and locall Medicines. A ſlender, cold and moiſt Diet muſt be obſerved, untill that time be paſſed, wherein the Patient may be ſafe and free from accidents which are uſually feared. Therefore let him be fed ſparingly, eſpecially if he be plethorick; he ſhall abſtain from ſalt and ſpiced fleſh, and alſo from Wine; It he ſhall be of a cholerick or ſanguine nature: In ſtead of Wine he ſhall uſe the decoction of Barly or Liquorice, or Water and Sugar. He ſhall keep himſelf quiet; for reſt is (in *Celſus* opinion) the very beſt Medicine. He ſhall avoid Venery, Contentions, Brawls, Anger, and other perturbations of the mind. When he ſhall ſeem to be paſt danger, it will be time to fall by little and little to his accuſtomed manner and diet of life. Univerſall remedies are Phlebotomies and purging, which have force to divert and hinder the defluxion, whereby the temper of the part might be in danger of change.

Why and how the temper of the wounded part muſt be preſerved.

For Phlebotomy it is not alwayes neceſſary, as in ſmall Wounds and bodies, which are neither troubled with ill humors, or Plethorick: But it is only required in great Wounds, where there is fear of defluxion, pain, *Delirium*, Raving and unquietneſs; and laſtly in a body that is Plethorick, and when the joynts, tendons, or nerves are wounded. Gentle purgations muſt be appointed, becauſe the humors are moved and inraged by ſtronger; whence there is danger of defluxion and inflammation: wherefore nothing is to be attempted in this caſe, without the advice of a Phyſitian.

In what wounds bloodletting is not neceſſary.

The Topick and particular Medicines are Agglutinative, which ought to be indued with a drying and aſtrictive qnality, whereby they may hold together the lips of the Wound, and drive away defluxion, having alwayes regard to the nature of the part and the greatneſs of the diſeaſe. The Simple Medicines are *Olibanum*, *Aloes*, *Sarcocolla*, *Bole-Armenick*, *Terra ſigillata*, *Sanguis Draconis*, Common and Venice, Turpentine, Gum, *Elemni*, Plantane, Horſe-tail, the greater Comfery, *Parina Volatilis* and many other things of this kind, which we ſhall ſpeak of hereafter in our Antidotary.

What medicines are to be judged agglutinative.

The fifth ſcope of healing Wounds, is the correction of thoſe Symptomes or Accidents which are accuſtomed to follow Wounds, which thing verily makes the Chirurgeon have much to do; For he is often forced to omit the proper cure of the diſeaſe, ſo to reſiſt the accidents and ſymptomes, as bleeeding, pain, inflammation, a feaver, convulſion, palſie, talking idly, or diſtraction, and the like. Of which we ſhall treat briefly and particularly, after we have firſt ſpoken of Sutures as much as we ſhall think fitting for this place.

## CHAP. VI.

### *Of Sutures.*

What wounds ſtand in no need of a ſuture.

WHen Wounds are made alongſt the thighes, legs, and arms, they may eaſily want Sutures, becauſe the ſolution of continuity is eaſily reſtored by Ligatures, but when they are made overthwart, they require a Suture, becauſe the fleſh and all ſuch like parts, being cut are drawn towards the ſound parts; whereby it comes to paſs that they part the further each from other; wherefore that they may be joyned and ſo kept, they muſt be ſowed, and if the Wound be deep, you muſt take up much fleſh with your needle; for if you only take hold of the upper part, the Wound is only ſuperficially healed: but the matter ſhut up, and gathered together in the bottome of the Wound, will cauſe abſceſſes and hollow Ulcers: Wherefore now we muſt treat of making of Sutures.

The firſt manner of ſuture.

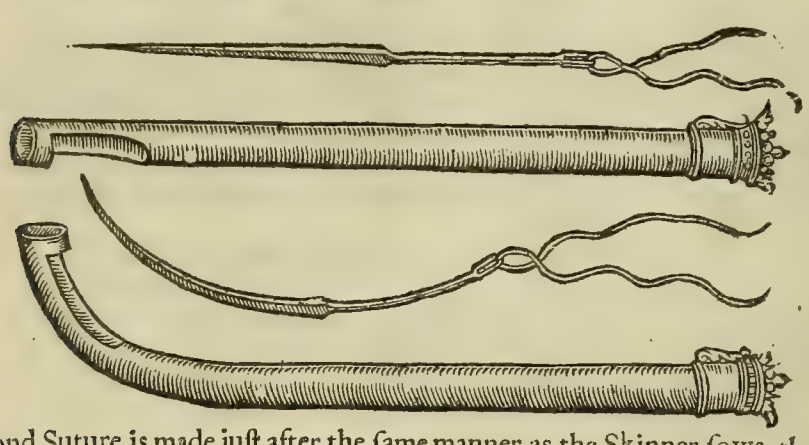
The firſt, called *Interpunctus*, leaves the diſtance of a fingers breadth, and therefore is fit for the green Wounds of the fleſhy parts, which cannot be cured with a Ligature, and in which no heterogeneous or ſtrange body remains; It is performed after this manner. You muſt have a ſmooth needle with a thred in it, having a three ſquare point, that ſo it may the better enter the skin, with the head of it ſomewhat hollowed, that the thred may lie therein; for ſo the needle will the better go through. You muſt alſo have a little pipe with a hole or window in the end, which you muſt hold and thruſt againſt the lip of the Wound, that it be not moved to the one ſide or other, whilſt you thruſt through the needle: And that we may ſee through that Window when the needle is thruſt through, and alſo draw it together with the thred, and withall hold the lip of the Wound in more firmly, that it follow not at the drawing forth of the needle and thred. Having thus pierced the lips of the Wound, tie a knot, neer to which cut off the thred; leſt that if any of it be left below the knot, it may ſo ſtick to the Emplaſters that it cannot be plucked and ſeparated from them without pain, when they are taken off. But you muſt note the firſt ſtitch muſt be thruſt through the midſt of the Wound, and then the ſecond muſt be in that ſpace which is between the midſt and one of the ends; but when you have made your ſtitches, the lips of the Wound muſt not bee too cloſely joined, but a little ſpace muſt be left open between them, that the matter may have free paſſage forth, and inflammation and pain may be avoided: otherwiſe if they ſhall be cloſely joined together without any diſtance between, a tumor after ariſing when the matter ſhall come to ſuppuration, the lips will

The form of your needle.

The form of the pipe with a window in it.

be ſo much diſtended that they may eaſily be broken by the ſtifneſs of the thred. But you muſt neither take hold of too much nor too little fleſh with your needle, for too little will not hold, and too much cauſeth pain and inflammation. And beſides leaves an ill favoured ſcar. Yet in deep wounds, ſuch as are thoſe which are made in the thicker muſcles, the needle muſt be thruſt home, that ſo it may comprehend more of the fleſhy ſubſtance; leſt the thred drawn away by the weight of the fleſh not taken hold of, may be broken. But oft-times wounds are ſeen made in ſuch places as it would be needfull, the Chirurgeon ſhould have a crooked needle and pipe, otherwiſe the Suture will not ſucceed according to his deſire. Wherefore I have thought good to ſet forth both their figures, that you may uſe either as occaſion ſhalll ſerve.

*The Figure of Pipes with feneſtels in them, and Needles fit for Sutures.*



The 2. means of Suture.

The ſecond Suture is made juſt after the ſame manner as the Skinner ſows their fels or furs. And the guts muſt be ſowed with this kind of Suture, (if they ſhall be at any time wounded) that the excrements come not forth by the wound.

The third manner of Suture.

The third Suture is made by one or more needles having thred in them, thruſt through the wound, the thred being wrapped to and again at the head and the point of the needle, as boyes uſe to faſten their needle, for fear of loſing it, in their caps, or clothes. This kind of Suture is fit in the curing and healing of Hare-lips, as we ſhall ſhew you hereafter expreſſed by a Figure.

The 4. kind of Suture termed *Gaſtroraphia*.

The fourth kind of Suture is termed *Gaſtroraphia*, invented for the reſtoring and uniting the great Muſcles of the *Epigaſtrium*, or lower belly, cut with a great wound together with the *Peritonæum* lying under them. The manner whereof we ſhall ſhew in due place.

The 5. kind called the Dry Suture.

The fifth kind is called the dry Suture, which we uſe only in the wounds of the face, which alſo we will deſcribe in its proper place.

## CHAP. VII.

### *Of the flux of blood, which uſually happens in Wounds.*

The ſigns of blood flowing from an artery.

OFt-times great bleeding follows upon wounds, by reaſon of ſome veſſel cut, broken, or torn, which there is need to heal and help diligently, becauſe the blood is the treaſure of nature, without which life cannot conſiſt. The blood which floweth from an Artery, is thus known. It is more ſubtile, it runs forth as it were leaping, by reaſon of the vitall ſpirit contained together with it in the Arteries. On the contrary that which floweth from a Vein is more groſs, black, and ſlow. Now there are many wayes of ſtanching blood.

The firſt way of ſtaying bleeding.

The firſt and moſt uſuall is that, by which the lips of the Wound are cloſed, and unleſs it be ſomewhat deep, are contained by Medicines which have an aſtringent, cooling, drying, and glutinous faculty; As *terræ ſigill. Boli Armeni, ana* ℥ ß, *Thuris, Maſtichis, Myrrhæ, Aloes, ana* ʒ ij, *Farinæ volat. molend.* ℥ j, *Fiat pulvis qui albumine ovi excipiatur.* Or Rx. *Thuris & Aloes, ana partes æquales*. Let them be mixt with the white of an Egge, and the down of a hare, and let the pledgets be dipped in theſe Medicines, as well thoſe which are put unto the Wound as thoſe which are applyed about it. Then let the Wound be bound up with a double clop and fit Ligature, and the part be ſo ſeated as may ſeem the leaſt tronbleſome and moſt free from pain.

The 2. manner of ſtanching it.

But if the blood cannot be ſtayed by this means, when you have taken off all that covereth it, you ſhall preſs the Wound and the orifice of the Veſſell with your thumb, ſo long untill the blood ſhall be concrete about it, into ſo thick a clot as may ſtop the paſſage.

The 3. way by binding of the veſſels.

But if it cannot be thus ſtayed, then the Suture (if any be) muſt be opened, and the mouth of the Veſſell towards the originall or root, muſt be taken hold of, and bound with your needle and thred, with as great a portion of the fleſh as the condition of the part will permit. For thus I have ſtaid great bleedings, even in the amputation of members, as I ſhall ſhew in fit place. To perform this work, we are often forced to divide the skin

which

which covereth the wounded veſſell. For if the Jugular vein, or Artery be cut, it will contract and with draw it ſelf upwards and downwards. Then the skin it ſelf muſt be laid open under which it lyeth, and thruſting a needle and thred under it, it muſt be bound as I have often done. But before you looſe the knot, it is fit the fleſh ſhould be grown up, that it may ſtopt the mouth of the veſſell, leſt it ſhould then bleed. An admonition

But if the condition of the part ſhall be ſuch as may forbid this comprehenſion; and binding of the veſſell, we muſt come to *Eſcharoticks*, ſuch as are the powder of burnt *Vitriol*, the powder of Mercury, with a ſmall quantity of burnt Allum; and Cauſticks which cauſe an Eſcar. The falling away of which muſt be left to nature, and not procured by art, leſt it ſhould fall away before that the orifice of the veſſell ſhall be ſtopt with the fleſh, or clotted blood. The 4 way by Eſchaoricks.

But ſometimes it happens that the Chirurgeon is forced wholly to cut off the veſſell it ſelf, that thus the ends of the cut veſſell withdrawing themſelves, and ſhrincking upwards and downwards, being hidden by the quantity of the adjacent and incompaſſing parts, the flux of the blood, which was before not to be ſtaid, may be ſtopped with leſſe labour. Yet this is an extream remedy and not to be uſed, unleſſe you have in vain attempted the former. The 5. way by cutting off the veſſels.

## CHAP. VIII.

*Of the pain which happens upon wounds.*

THe pains which follow upon wounds ought to be quickly aſſwaged, becauſe nothing ſo quickly dejects the powers, and it alwayes cauſes a defluxion, of how good ſoever a habit and temper the body be of; for Nature ready to yeeld aſſiſtance to the wounded part, alwayes ſends more humors to it, than are needfull for the nouriſhment thereof, whereby it comes to paſſe that the defluxion is eaſily increaſed, either by the quantity, or quality, or by both. Pain weakens the body, and cauſes defluxions.

Therefore to take away this pain, the author of defluxion, let ſuch medicines be applyed to the part as have a repelling and mitigating faculty; as ℞. *Olei Myrtili, & Roſarum, ana* ℥ ij, *Ceræ alb.* ℥ i, *Farinæ hordei*, ℥ ß, *Boli armeni, & terræ ſigillat. ana* ʒ vj, Melt the Wax in the oyls, then incorporate all the reſt, and according to Art, make a medicine to be applyed about the part: or ℞. *Emplaſt. Diacalcith.* ℥ iv, *Ole. Roſar. & aceti, ana* ℥ ß, *liquifiant ſimul*, and let a medicine be made for the fore mentioned uſe. Irrigations of oyl of Roſes and Myrtiles, with the white of an Egge, or a whole Egge added thereto, may ſerve for lenitives, if there be no great inflammation; Rowlers and double cloaths moyſtened in Oxycrate, will be alſo convenient for the ſame purpoſe. But the force of ſuch medicines muſt be often renewed, for when they are dryed, they augment the pain. But if the pain yeeld not to theſe, we muſt come to narcotick Medicines, ſuch as are the Oyl of Poppy, of Mandrake, a cataplaſm of Henbane and Sorrell, adding thereto Mallows and Marſh-mallows, of which we ſpoke formerly in treating of a Phlegmon. Divers anodynes or medicins to aſſwage pain.

Laſtly, we muſt give heed to the cauſe of the pain, to the kind and nature of the humor that flows down, and to the way which nature affects: for accordiug to the variety of theſe things, the Medicines muſt be varied, as if heat cauſe pain, it will be aſſwaged by application of cooling things; and the like reaſon obſerved in the contrary; if Nature intend ſuppuration, you muſt help forwards its indeavours with ſuppurating medicines.

## CHAP. IX.

*Of Convulſion by reaſon of a Wound.*

A Convulſion is an unvoluntary contraction of the Muſcles (as of parts movable at our pleaſure) towards their originall, that is, the Brain and Spinall Marrow, for by this the convulſed member or the whole body (if the convulſion be univerſall) cannot be moved at our pleaſure. Yet motion is not loſt in a Convulſion as it is in a Palſie, but it is only depraved: and becauſe ſometimes the Convulſion poſſeſſeth the whole body, otherwhiles ſome part thereof, you muſt note that there are three kinds of Convulſions in generall. What a Convulſion is.

The firſt is called by the Greeks *Tetanos*, when as the whole body grows ſtiffe like a ſtake that it cannot be moved any way. Three kinds of an univerſall Convulſion.

The ſecond is called *Opiſthotonos*, which is when the whole body is drawn backwards.

The third is termed *Emproſthotonos* which is when the whole body is bended or crooked forwards. A particular Convulſion is, when as the Muſcle of the Eye, Tongue, and the like parts which is furniſhed with a Nerve, is taken with a Convulſion. Repletion or Inanition, Sympathy or conſent of pain cauſe a Convulſion. Aboundance of humors cauſe Repletion, dulling the body by immoderate eating and drinking, and omiſſion of exerciſe, or any accuſtomed evacuation, as ſuppreſſion of the Hemorrhoides, and courſes: for hence are ſuch like excrementitious humors drawn into the Nerves, with which they being replete and filled, are dilated more than is fit, whence neceſſarily becoming Three cauſes of a Convulſion. Cauſes of Repletion.

more ſhort, they ſuffer Convulſion. Examples whereof appear in Leather and Lute or Viol-ſtrings, which ſwoln with moiſture in a wet ſeaſon are broken by repletion.

Cauſes of Inanition.

Immoderate vomitings, fluxes, bleedings, cauſe Inanition or Emptineſs, wherefore a Convulſion cauſed by a wound, is deadly: as alſo by burning feavers. For by theſe and the like cauſes, the inbred & primogeneous humidity of the Nerves is waſted, ſo that they are contracted like leather which is ſhrunk up, by being held too neer the fire, or as fidle ſtrings which dryed with Summers heat, are broken with violence, ſuch a convulſion is incurable: For it is better a Feaver follow a Convulſion, than a Convulſion a Feaver; as we are taught by *Hippocrates*, ſo that ſuch a Feaver be proportionall to the ſtrength of the convulſifique cauſe, and the Convulſion proceed from Repletion; for the abundant and groſs humor cauſing the Convulſion is digeſted and waſted by the feaveriſh heat.

*Aph. 26. ſec. 2.*

Cauſes of convulſion by conſent of pain.

The cauſes of a convulſion by reaſon of pain, are either the puncture of a Nerve, whether it be by a thing animal, as by the biting of a venemous beaſt; or by a thing inanimate, as by the prick of a needle, thorn or pen-knife; or great & piercing cold, which is hurtfull to the wounds, principally of the nervous parts; whereby it comes to paſs, that by cauſing great and bitter pain in the nerves they are contracted towards their originall, that is, the Brain, as if they would crave ſuccour from their parents in their diſtreſſed eſtate. Beſides alſo, an ill vapour carried to the brain from ſome putrefaction ſo vellicateth it, that contracting it ſelf, it alſo contracteth together with it al the Nerves and Muſcles, as we ſee it happeneth in thoſe which have the falling ſickneſs. By which it appears that not only the brain it ſelf ſuffereth together with the Nerves, but alſo the Nerves with the Brain. The ſigns of a Convulſion are difficult, painfull and depraved motions, either of ſome part or of the whole body, turning aſide of the Eyes and whole Face, a contraction of the Lips, a drawing in of the Cheeks, as if one laughed, and an univerſall ſweat.

Signs of a convulſion.

## CHAP. X.

### *The cure of a Convulſion.*

The cauſe of a Convulſion by Repletion. The cure of a

THE cure of a Convulſion, is to be varied according to the variety of the convulſive cauſe, for that which proceeds from Repletion muſt be otherwiſe cured, than that which is cauſed by an Inanition; and that which proceeds of pain, otherwiſe than either of them. For that which is cauſed by repletion is cured by diſcuſſing and evacuating medicines: as by diet conveniently appointed, by purging, bleeding, digeſtive locall Medicines, exerciſe, frictions, ſulphurious baths and other things appointed by the preſcription of ſome learned Phyſitian which ſhall overſee the cure, which may conſume the ſuperfluous and excrementitious humors that poſſeſs the ſubſtance of the Nerves, and habit of the body. The locall remedies are Oyls, Unguents and Liniments, with which the Neck, back-bone and all the contracted parts ſhall be anointed. The Oyls are, the oyl of Foxes, Bayes, Cammomill, Worms, Turpentine, of *Coſtus*, of *Caſtoreum:* The Oyntments are *Vnguentum Arragon, Agrippæ, de Althæa, Martiatum.* This may be the form of a Liniment; ℞. *Olei chamæm. & Laurin. ana* ℥ ij, *Olei Vulp.* ℥ i, *Vnguenti de Althæa & Marti. an.* ℥ ß, *Axungiæ vulpis,* ℥ i, *Aquæ vitæ,* ℥ i ß, *Ceræ quantum ſufficit.* Make a Liniment for your uſe, or ℞. *Olei Lumbric. de Spica & de Caſtoreo, an.* ℥ iij, *Axung. hum.* ℥ i, *Sulphuris vivi,* ℥. ß. *Ceræ quantum ſufficit.* Make a Liniment, or ℞. *Vnguenti Martiati, & Agrip. an.* ℥ iij. *Olei de Terebinth.* ℥ i ß, *Olei Salviæ,* ℥ ß, *Aquæ vitæ* ℥ i, *Ceræ* ℥ i ß, *fiat linimentum.* But this diſeaſe is cured by ſlender diet, and ſweating with the Decoctions of *Guiacum*, becauſe by theſe remedies the groſs, tough, and viſcid excrements, which are in fault, are digeſted.

The cure of a Convulſion cauſed by inanition.

A Convulſion proceeding of Inanition is to be cured by the uſe of thoſe things, which do wholeſomly and moderately nouriſh. And therefore you muſt preſcribe a diet conſiſting of meats full of a good nouriſhment, as broaths and cullices of Capons, Pigeons, Veal, & Mutton, boyling therein Violet and Mallow leaves. Conſerves muſt be ordained, which may ſtrengthen the debilitated powers, and humect the habit of the body, ſuch as are the Conſerves of Bugloſs, Violets, Borage and water Lillies. The following broath will be profitable, ℞. *Lactucæ, Bugloſ. & portul. an M* i, *quatuor ſeminum frigid. major. an.* ℥ ß, *ſeminis Barberis* ℥ i. Let them all be boyled with a chicken, and let him take the broath every morning. If thirſt oppreſs him, the following Julep will be good. ℞. *Aquæ roſar.* ℥ iv, *Aquæ viol.* ℔ ß, *Saccari albiſſimi* ℥ vi. *fiat Iulep, utatur in ſiti.* If the Patient be bound in his body, emollient and humecting Clyſters ſhall be appointed, made of the decoction of a ſheeps head and feet, Mallows, Marſh Mallows, Pellitory of the wall, Violet leaves, and other things of the like faculty; or that the remedy may be more ready and quickly made: let the Clyſters be of Oyl and Milk. Topick remedies ſhall be Liniments and Baths. Let this be the example of a Liniment. ℞. *Olei Viol. & Amygdal. dulc. an.* ℥ ij, *Olei Lilior. & Lumbric. an.* ℥ i, *Axungiæ porci recentis,* ℥ iij, *Ceræ novæ quantum ſufficit, fiat Linimentum,* with which let the whole ſpine and part affected be anointed: This ſhall be the form of an emollient and humecting bath. ℞. *Fol. Malvæ, Bis Malvæ, Pariet. ana M* vi, *Seminis Lini & fœnug. ana* ℔ ß, *Coquantur in aqua communi, addendo Olei Lilior.* ℔ viij. Make a Bath: into which let the Patient enter when it is warm. When he ſhall come forth of the Bath, let him be dried

An Emollient Liniment for any Convulſion

An Emollient and humecting Bath.

with

with warm clothes,or reſt in his bed avoiding ſweat. But if the patient be able to undergo the charge, it will be good to ordain a bath of milk, or oyl alone, or of them equally mixt together.

## CHAP. XI.

*Of the cure of a Convulſion, by ſympathy and pain.*

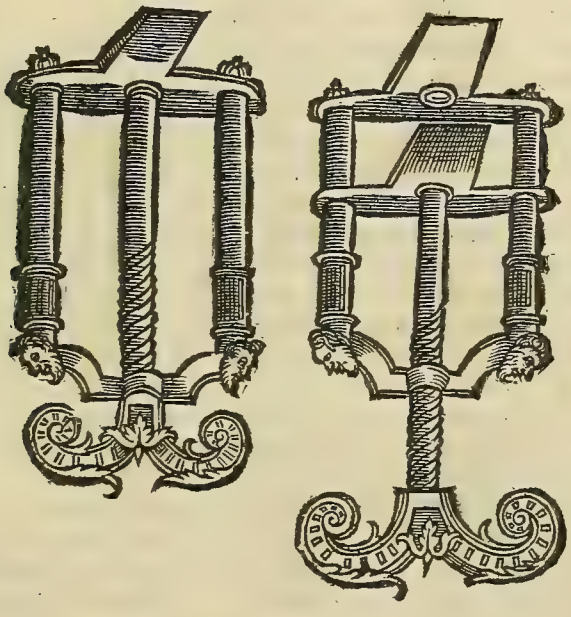
A Convulſion which is cauſed both by conſent of pain and Communication of the affect, is cured by remedies which are contrary to the dolorifick cauſe. For thus if it proceed from a puncture or venemous bite, the wound muſt be dilated and inlarged by cutting the skin, that ſo the venenate matter may flow forth more freely, for which purpoſe alſo medicines which are of a thin and liquid conſiſtence,but of a drying and digeſtive faculty ſhall be powred in, to call forth and diſſolve the virulency, as Treacle and Mithridate,diſſolved in *Aqua vitæ*,with a little of ſome mercuriall powder: for this is a noble antidote. Alſo cupping glaſſes and ſcarifications will be good. Laſtly, the condition of all dolorifick cauſes, ſhall be oppugned by ths oppoſition of contrary remedies,as if pain by reaſon of a pricked nerve or tendon,ſhall cauſe a Convulſion,it muſt preſently be reſiſted by proper remedies, as oyl of Turpentine, of *Euphorbium*,mixt with *Aqua vitæ*,and alſo with other remedies appropriated to punctures of the nerves. If the pain proceed from exceſs of cold, becauſe cold is hurtfull to the brain, the ſpinall marrow, and nerves; the patient ſhall be placed in a hot air, ſuch as that of a hot-houſe,or ſtoave,all the ſpine of his back and convulſed parts, muſt be anointed with the hot liniments above mentioned: for that is much better, than ſuddenly to expoſe him from the conceived convulſifick cauſe to a moſt hot fire or warm Bath. In the mean time the Chirurgeon muſt take diligent heed,that as ſoon as the ſigns of the Convulſion to come, or already preſent,or at hand,do ſhew themſelves, that he put a ſtick between the patients teeth, leſt they be faſt locked by the pertinacious contraction of the Jaws: for many in ſuch a caſe have bit off their tongues,for which purpoſe he ſhall be provided of an inſtrument called *Speculum Oris*, which may be dilated and contracted according to your mind by the means of a ſcrew,as the figures underneath demonſtrate, the one preſenting it open and ſomewhat twined up, and the other as it is ſhut.

The Cure of a Convulſion by a puncture,or bite.

A worthy *Alixipharmacum* or Antidote.

You muſt hinder the locking of the teeth.

*The Figure of a* Speculum Oris, *to open the teeth when they are locked or held faſt together.*



## CHAP. XII.

*Of the Palſie.*

THe Palſie is the reſolving or mollification of the nerves, with privation of ſenſe and motion, not truly of the whole body,but of the one part thereof,as of the right or left ſide. And ſuch is properly named the Palſie: for otherwiſe and leſs properly the reſolution of ſome one member is alſo called the Palſie: for when the whole body is reſolved,it is an Apoplexy. Therefore the Palſie ſometimes takes half the body,otherwhiles the upper parts which are between the navell and the head, otherwhiles

What a Palſie is.

The differences thereof.

therwhiles the lower which are from the navell to the feet; ſometimes the tongue, gullet, bladder, yard, eyes; and laſtly, any of the particles of the body.

How it differs from a Convulſion.

It differs from a Convulſion in its whole nature. For in a convulſion, there is a contention and contraction of the part, but in this a reſolving and relaxation thereof: beſides, it commonly happeneth that the ſenſe is either aboliſhed or very dull, which uſually remains perfect in a Convulſion. There are ſome which have a pricking, and as it were great pain in the part.

The cauſes.

The cauſes are internall or externall, the internall are humors obſtructing one of the ventricles of the brain, or one ſide of the ſpinall marrow, ſo that the animall faculty, the worker of ſenſe and motion, cannot by the nerves come to the part to perform its action. The externall cauſes are a fall, blow, and the like injuries, by which oft-times the joints are diſlocated, the ſpinall marrow wreſted aſide, and conſtrictions and compreſſions of the *Vertebræ* ariſe, which are cauſes that the animall ſpirit cannot come to the Organs in its whole ſubſtance. But it is eaſy by skill in Anatomy perfectly to underſtand by the reſolved part the ſeat of the morbifick cauſe, for when there is a Palſie properly ſo called, that is, when the right or left ſide is wholly ſeized upon, then you may know that the obſtruction is in the brain, or ſpinall marrow; but if the parts of the head being untoucht, either of the ſides being wholly reſolved, the fault remains in the originall of the ſpinall marrow; if the armes be taken with this diſeaſe, we may certainly think that the matter of the diſeaſe lies hid in the fifth, ſixth, and ſeventh *Vertebra* of the neck. But if the lower members languiſh, we muſt judge the Paralytick cauſe to be contained in the *Vertebræ* of the loins and holy bone. Which thing the Chirurgeon muſt diligently obſerve that he may alwaies have recourſe to the originall of the diſeaſe. The Palſie which proceeds from a nerve cut, or exceedingly bruiſed, is incurable, becauſe the way to the part by that means is ſhut againſt the animall ſpirit. Old men ſcarce or never recover of the Palſie, becauſe their native heat is languid, and they are oppreſſed with abundance of excrementitious humors; neither doth an inveterate Palſie which hath long poſſeſt the part, neither that which ſucceeds an Apoplexy, yeeld us any better hope of cure. It is good for a feaver to come upon a Palſie, for it makes the diſſipation of the reſolving and relaxing humor, to be hoped for. When the member affected with the palſie, is much waſted, and the oppoſite on the contrary, much encreaſed in quantity, heat and colour, it is ill: for this is a ſigne of the extream weakneſs of the afflicted part, which ſuffers it ſelf to be defrauded of its nouriſhment, all the proviſion flowing to the ſound or oppoſite ſide.

It is good for a feaver to happen upon a palſie.

## CHAP. XIII.

### *Of the cure of the Palſie.*

The decoction of *Guaiacum* is good for a palſie.

Things actually hot good for to be applied to paralytick members.

IN the cure of the Palſie we muſt not attempt any thing, unleſs we have firſt uſed generall remedies, diet and purging; all which care lyeth upon the learned and prudent Phyſitian. The Decoction of *Guaiacum* is very fit for this purpoſe, for it procures ſweat and attenuates, digeſts and drieth up all the humidity which relaxeth the nerves: but when ſweat doth not flow it ſhall not be unprofitable to put about the reſolved members, bricks heated red hot in the fire and quenched in a decoction of Wine, Vinegar, and reſolving herbs, or alſo ſtone bottles, or Ox and Swine bladders, half filled with the ſame decoction; for ſuch heat which is actuall reſuſcitateth and ſtrengthneth the heat of the part, which in this diſeaſe is commonly very languid: Then the patient ſhall go into a bathing-tub, which is vailed or covered over juſt as we have deſcribed in our Treatiſe of Baths, that ſo he may receive the vapour of the following decoction. ℞ *fol. Salviæ, Lavend. Lauri. major. Abſinth. Thym. Angelicæ, Rutæ, ana M.ß. Florum Chamæm. Melil. Anethi, Anthoſ. ana P ij. Baccar. Laur. & Iuniper. Conquaſſatar. ana ℥ j. Caryophyl. ℥ ij. Aquæ fontanæ & Vini albi, ana ℔iv.* Let them be all put in the veſſel mentioned in the Treatiſe lately deſcribed for uſe. The patient ſhall keep himſelfe in that Bathing-tub, as long as his ſtrength will give him leave, then let him be put into his bed well covered, where he ſhall ſweat again, be dried and reſt. Then let him be preſently anointed with the following ointment, which *Leonellus Faventius* much commends, ℞ *Olei Laurini & de Terebinth. ana ℥ iij. Olei Nardini & petrolei, ana ℥ j. Vini malvatici, ℥ iv. Aquæ vitæ ℥ij. Pyrethri, Piperis, Sinap. Granor. Junip. Gummi hederæ, anacard. Ladani puri, an. ℥ jß. Terantur & miſceantur omnia cum Oleis & Vino: bulliant in vaſe duplici uſque ad Vini conſumptionem, facta forti expreſſione, adde Galbani, Bdellii, Euphorbii, Myrrhæ, Caſtorei, adipis urſi, Anatis, Ciconiæ, an. ℥ ij.* Make an ointment in form of a liniment, adding a little wax if need ſhall require. Or you ſhall uſe the following remedy approved by many Phyſitians. ℞ *Myrrhæ & Aloes, Spicæ nardi, Sanguinis draconis, thuris, cyperi, Bdellii, Carpobalſami, amomi, ſarcocollæ, croci, maſtic. gummi arabici, ſtyrac. liquidæ, ladani, caſtorei, ana ℥ ij. Moſchi, ℈ j. Aquæ vitæ, ℥ j. Terebinthinæ venetæ, ad pondus omnium, pulverabuntur pulveriſanda & gummi eliquabuntur cum aqua vitæ & aceti tantillo.* And let them all be put in fit veſſels, that may be diſtilled in *Balneo Mariæ*, and let the ſpine of the back, and paralytick limbs be anointed with the liquor which comes from thence. I have often tried the force of this following Medicine. ℞ *rad. Angel. Ireos. floren. gentian. cyperi, ana ℥ j. Calami aromat. Cinam.*

*Leon. Faventius* his ointment.

An approved ointment for the palſie.

*nam. Caryophil. nucis Moſch. macis, ana* ʒij. *Salviæ major. Iuæ arthriticæ, Lavend. roriſm. ſatureiæ, pu-leg. calament. mentaſtri, ana M* ß. *florum chamæm. melil. hyperic. anthos, ſtœchad. ana* P j. *Conciſa om-nia contundantur. & in Aqua vit. & Vini malvat. an.* ℔ij. *infundantur.* And let them be diſtilled in *Balneo Mariæ*, like the former let the affected parts be moiſtned with the diſtilled liquor, of which alſo you may give the patient a ſpoon full to drink in the morning with ſome Sugar. For thus the ſtomach will be heated, and much phlegm contained therein as the fuel of this diſeaſe, will be conſumed.

A diſtilled water good to waſh them outwardly, & to drink inwardly.

You muſt alſo appoint exerciſes of the affected parts, and frequent and hard frictions, with hot linnen clothes, that the native heat may be recalled and the excrements contained in the parts digeſted: you may alſo uſe the Chymicall oyls of Roſemary, Tyme, Lavander, Cloves, Nutmegs; and laſtly, of all ſpices, the manner of extracting whereof we ſhall hereafter declare in a peculiar Treatiſe.

Exerciſes and frictions.

Chymical oyls.

## CHAP. XIV.

### *Of Sowning.*

SOowning is a ſodain and pertinacious defect of all the powers, but eſpecially the vitall: in this the patients lie without motion and ſenſe, ſo that the Ancients thought that it differed from death only in continuance of time. The cauſe of ſowning, which happens to thoſe that are wounded is bleeding, which cauſeth a diſſipation of the ſpirits: or fear, which cauſeth a ſodain and joint retirement of the ſpirits to the heart. Whence follows an intermiſſion of the proper duty, as alſo of the reſt of the faculties, whilſt they being thus troubled, are at a ſtand. Alſo Sowning happens by a putrid and venenate vapour, carried to the heart by the arteries, and to the brain by the nerves; by which you may gather, that all ſowning happens by three cauſes. The firſt is, by diſſipation of the ſpirits and native heat, as in great bleeding. And then by the oppreſſion of theſe ſpirits by obſtruction, or compreſſion, as in fear, or tumult; for thus the ſpirits fly back haſtily from the ſurface and habit of the body, unto the heart and center. Laſtly, by corruption, as in bodies filled with humours, and in poyſonous wounds. The ſigns of ſowning are paleneſs, a dewy and ſodain ſweat ariſing, the failing of the pulſe, a ſodain falling of the body upon the ground without ſenſe and motion, a coldneſs poſſeſſing the whole body, ſo that the patient may ſeem rather dead, than alive. For many of theſe who fall into a ſown die unleſs they have preſent help.

What ſowning is.

Three cauſes of ſowning.

Therefore you ſhall help them, if when they are ready to fall, you ſprinkle much cold water in their face, if that the ſowning happen by diſſipation of the ſpirits, or if they ſhal be ſet with their faces upwards, upon a bed or on the ground, as gently as may be; and if you give them bread dipt in wine to hold and chew in their mouths. But if it be cauſed by a putrid vapour and poyſonous air, you ſhall give them a little Mithridate or Treacle in *Aqua vitæ* with a ſpoon, as I uſually do to thoſe which have the plague, or any part affected with a Gangrene, or ſpacell. But if the patients cannot be raiſed out of their ſownes, by reaſon of the pertinacious oppreſſion and compreſſion of the ſpirits about the heart, you muſt give them all ſuch things as have power to diffuſe, cal forth and reſuſcitate the ſpirits, ſuch as are, ſtrong wines to drink, ſweet perfumes to ſmell: You muſt call them by their own name lowd in their eare, and you muſt pluck them ſomewhat hard by the hairs of the Temples, and neck. Alſo rub the temples, noſtrils, wriſts and palms of the hands with *Aqua vitæ*, wherein Cloves, Nutmegs, and Ginger have been ſteeped.

The cure of ſowning cauſed by diſſipation of ſpirits.

The cure of ſowning cauſed by a venenate air.

The cure of ſowning cauſed by oppreſſion & obſtruction.

## CHAP. XV.

### *Of* Delirium (i.) *Raving, Talking idly or Doting.*

What a ſymptomaticall *Delirium* is.

The cauſes thereof.

DOting or talking idly, here is uſed for a ſymptome which commonly happeneth in feavers cauſed by a wound, and inflammation; and it is a perturbation of the phantaſie, and function of the mind, not long induring. Wherefore ſuch a doting happens upon wounds, by reaſon of vehement pain, and a feaver, when as the nervous parts as the joints, ſtomach, and midriffe, ſhall be violated.

Why the brain ſuffers with the midriffe.

For the Ancients did therefore call the Middriffe *Phrena*, becauſe when this is hurt, as if the mind it ſelf were hurt, a certain phrenſie enſues; that is, a perturbation of the animall faculty, which is imployed in ratiocination; by reaſon of the community which the *Diaphragma* hath with the brain, by the nerves, ſent from the ſixth conjugation, which are carried to the ſtomach. Therefore doting happens by too much much bleeding, which cauſeth a diſſipation of the ſpirits, whereby it happens that the motions and thoughts of the mind erre, as we ſee it happens to thoſe who have bled much in the amputation of a member. And it happens by the puncture of a venemous beaſt, or from ſeed retained or corrupted in the womb, or from a Gangrene or Sphacel, from a venenate and putrid air carried up to the brain, or from a ſodain tumult & fear. Laſtly, what things ſoever with any diſtemper eſpecially hot, do hurt and debilitate the mind. Theſe may cauſe doting by the afflux

The Cure,

of

of humors, ſpecially cholerick, by diſſipation, oppreſſion or corruption of the ſpirits. Therefore if it ſhall proceed from the inflammation of the brain, and *Meninges* or membranes thereof; after purging and blood-letting by the preſcription of a Phyſitian, the hair being ſhaved or cut off, the head ſhall be fomented with roſe vinegar, and then an Emplaiſter of *Diacalcitheos* diſſolved in oyl and vinegar of Roſes, ſhall be laid thereupon. Sleep ſhall be procured with Barly creams, wherein the ſeeds of white Poppy have been boiled, with broths made of the decoction of the cold ſeeds of Lettuce, Purſlain, Sorrell, and ſuch like. Cold things ſhall be applyed to his noſtrills, as the ſeeds of Poppy gently beaten with Roſe water and a little vinegar. Let him have merry and pleaſant companions that may divert his mind from all cogitation of ſorrowful things, and may eaſe and free him of cares, and with their ſweet intreaties may bring him to himſelf again. But if it happen by default of the ſpirits, you muſt ſeek remedy from theſe things which have been ſet down in the Chapter of Sowning.

*The End of the Ninth Book.*

# OF THE GREENE AND BLOODY WOUNDS OF EACH PART.

## THE TENTH BOOK.

### CHAP. I.

*Of the kinds or differences of a broken skull.*

NOw that we have briefly treated of wounds in generall, that is, of their differences, ſigns, cauſes, prognoſticks and cure, and alſo ſhewed the reaſon of the accidents and ſymptoms which uſually follow and accompany them, it remains that we treat of them as they are incident to each part, becauſe the cure of wounds muſt be diverſly performed according to the diverſity of the parts. Now we will begin with the wounds of the head. Therefore the head hath the hairy ſcalp lightly bruiſed without any wound, otherwhiles it is wounded without a Contuſion, and ſometimes it is both contuſed and wounded: but a fracture made in the skull, is ſometimes ſuperficiary, ſometimes it deſcends even to the *Diploe*, ſometimes it penetrates through the 2 Tables, and the Meninges into the very ſubſtance of the brain; beſides, the brain is oft-times moved and ſhaken with breaking of the internall veins, and divers ſymptoms happen when there appears no wound at all in the head: of all and every of which we will ſpeak in order, and add their cure, eſpecially according to the opinion of the divine *Hippocrates*. He in his Book of the wounds of the head, ſeems to have made 4 or 5 kinds of fractures of the skull. The firſt is called a fiſſure or fracture, the 2 a contuſion or colliſion, the 3 is termed *Effractura*, the 4 is named *Sedes*, or a ſeat; the 5 (if you pleaſe to add it) you may call a Counterfiſſure, or as the interpreter of *Paulus* cals it, a *Reſonitus*. As when the bone is cleft on the contrary ſide, to that which received the ſtroak. There are many differences of theſe 5 kinds of a broken skul. For ſome fractures are great, ſome ſmall, and others indifferent; ſome run out to a greater length or bredth; others are more contracted; ſome reſide only in the ſuperficies; others deſcend to the *Diploe*, or elſe pierce through both the Tables of the skull; ſome run in a right line, others in an oblique and circular; ſome are complicated amongſt themſelves, as a fiſſure is neceſſarily and alwaies accompanied with a Colliſion or Contuſion; and others are aſſociated with divers accidents, as pain, heat, ſwelling, bleeding and the like. Sometimes the skull is ſo broken, that the membrane lying under it, is preſſed with ſhivers of the bone, as with pricking needles. Somewhiles none of the bones falls off. All which differences are diligently to be obſerved, becauſe they force us to vary the cure, and therefore for the help of memory, I have thought good to deſcribe them in the following Table.

The differences of a broken head.

The kinds of a broken Skull out of *Hippocrates*.

Differences from their quantity.
Differences from their figure.
From their complication.

## A Table of the fractures of the Skull.

- *A fracture, or solution of continuity in the skull is caused either by*
  - *Contusion, that is, a collision of a thing bruising, hard, heavy and obtuse, which shall fall or bee smitten against the head, or against which the head shall be knocked, so that the broken bones are divided, or*
    - *Keep their naturall figure and site touching each other, whence proceeds that fracture of the skull which is called a fissure, which is*
      - *Either manifest, and apparent, that is*
        - *To your sight,*
        - *To your feeling,*
        - *Or instrument.*
      - *Or obscure and not manifest, when as not the part which received the blow is wounded, but the contrary thereto; and that happens either*
        - *In the same bone, and that two manner of wayes, as*
          - *On the side; as for example, when the right side of the bone of the forehead is strucken, the left is cleft.*
          - *Or from above to below, as when not the first Table which received the blow is cleft, but that which is under it.*
        - *In divers bones, to wit in such men as want sutures, or have them very close, or disposed otherwaies then is fit, and this oppositon is either*
          - *From the right side to the left, and so on the contrary, as when the right* Bregma *is struck, and the left cleft.*
          - *From before to behind, and the contrary, as when the forehead is smitten, the nowle is cleft.*
        - *Or between both, that is, the obscure and manifest, as that which is termed a Capillary fissure, and is manifested by smearing it over with oyl, and writing ink.*
    - *Or lose their site, and that either*
      - *Wholly, so that the particles of the broken bone removed from their seat, and falling down, press the membrane, whence proceeds that kind of effracture which retains a kind of attrition, when as the bone struck upon is broken as it were into many fragments, shivers and scales, either apparent, or hid in the sound bone, so that it is pressed down.*
      - *Or in some sort, as when the broken bone is in some part separated, but in others adheres to the whole bone, whence another kind of effracture arises; you may call it Arched, when as the bone so swels up, that it leaves an empty space below.*
  - *Or by incision of a sharp, or cutting thing, but that incision is made, either by*
    - Succision, *when the bone is so cut, that in some part it yet adheres to the sound bone.*
    - Resciſſion, *when the fragment falls down wholly broken off.*
    - Or Seat, *when the mark of the weapon remains imprinted in the wound that the wound is of no more length nor bredth than the weapon fell upon.*

Another

## Another Table of the differences of a fractured Skull.

- *The differences of fractures common to these of all other parts are drawn, either from*
  - *Their nature, according to which fractures are cald,*
    - *Simple, as when they are found solitary and by themselves.*
    - *Compound and that either*
      - *Mutually with themselves, as a contusion, or collision with incision, a fissure with an effracture.*
      - *Or*
      - *with other symptomes, as swelling, pain, heat, bleeding, convulsion and the like.*
  - *Their Quantity, whence they are called, great, indifferent and small, according to the triple dimension of length, breadth and profunditie.*
  - *Their figure, from whence they are called*
    - *Right,*
    - *Oblique,*
    - *Transverse,*
    - *Round,*
    - *Triangular.*
  - *Their site, whence they are termed on the fore or back, or the right or left, or the upper or lower part; or superficiary and profound.*
  - *The part, whence it is called a Fracture of the Forehead, Nowl, Bregma, and Stony bones; and hence it is judged, what may be deadly or hopefull of recovery, easie or difficult to cure.*

## CHAP. II.

*Of the causes and signs of a broken Skull.*

The externall causes.

THe causes of a broken Skull are externall, as a fall, a blow or stroak with any kind of weapon, sharp, obtuse, heavy, hard, the bitings of Beasts and many other things of the like kind. But the signs by which we come to know that the Skull is broken, are of two kinds; for some of them are found out by the reasoning and discourse of the mind, other by the sense, as those which lay open the wound to the ey & hand.

Rationall causes.

The Rationall signs shew by these things which have happened upon the thing it self, whether it be, and of what sort it is. For you may know the skull is broken, if the Patient shall fall down with the stroak, or if he shal fal headlong from a high place upon some hard thing. If for sometime after the stroak, he shall lie without speaking, sight and hearing, if he shall have felt and feel much pain, so that he is often forced to put his hand to the Wound. But also the weapon is to be considered, that is, whether if it be heavy, obtuse, pricking or sharp. Also we must consider with what and how great strength the stroak was given, and with how great anger and from what distance the weapon fell. Also he must consider whether the Patient received the blow; with his head unarmed and naked; whether he fell into a sown presently after the blow; whether when he came to him self, he was in his right senses; whether his eys were blinded, whether he were troubled with a giddines or dizines, and whether he bled at the nose, mouth, ears, or eyes, and lastly whether he vomited. For *Hippocrates* wriees, that those who have their brain cut, must necessarily have a feaver and vomiting of choler to ensue thereupon, which *Galen* confirming in his Commentary saith, that the same happens also when the Wound comes to the Membranes of the brain.

*Aphor. 50. sec. 6.*

*Lib. 8. cap. 4.*

Also a dull sound as from a broken vessell coming from the skull, (the hairy scalp and *Pericranium* being taken off) and it being lightly smitten upon with an Iron probe, is said to be a sign of a fracture thereof, as it is recorded by *Paulus Ægineta*. Truly all these signs make a great conjecture or rather assuredness that the skul is wounded, and the brain hurt, as which cannot happen unless the bone be broken, as *Celsus* hath written. Yet many have had their skulls broken, who had no such sign immediately after the blow, but this is very seldome. But I do not think fit amongst so many signs, here to omit that which is set down by *Guido*. If any (saith he) will know in what place the skull is broke, let the Patient hold fast between his fore teeth, one end of a lute string or thread, and the Chirurgeon hold the other in his hand; then let him lightly touch or play upon the string with his fingers; for in the very instant of the sound or stroke, the Patient will be certainly admonished, or perfectly perceive the part of the skull that is broken, and as orecome and forc'd

by

by this ſenſe of pain, will by lifting up his hand make demonſtration thereof. As yet I have not been able to find the truth hereof by experience, although I have made tryall of it in many. Wherefore I cannot ſay any thing certainly of this ſign, as neither of that which is mentioned by *Hippocrates* in *Coais Præſ.* In ſuch as you doubt, whether the bones of the skull be broken, or not, you muſt judg by giving them the ſtalk of the Aſphodill, to chaw on both ſides of their jaws, but ſo that you bid them withall obſerve, whether they perceive any bone to crackle, or make a noiſe in their heads, for theſe which are broken ſeem to make a noiſe.

*Hippocrates* and *Guidoes* conjecturall ſigns of a broken skull.

But paſſing over theſe things, now let us come to theſe ſigns, which may be obvious to our ſenſes.

## CHAP. III.

*Of the ſigns of a broken skull, which are manifeſt to our ſenſe.*

THeſe ſigns are here ſaid to be manifeſt to ſenſe, which when the bone is bared, manifeſt the wound to our eyes, fingers and probe. But if the hairs ſtand upon one end in the wound, you may know the bone is broke, becauſe the hair which yeelds to the violence of the blow, cannot be ſo cut, the bone which reſiſts the ſtroak being not violated, as it is obſerved by *Hippocrates*; wherefore we may by the ſight of this one thing, before any inſpection of the wound it ſelf, ſuſpect by a probable conjecture, that the skull is broken, and perſwade the beholders or ſtanders by ſo much.

Senſible ſigns of a broken skull before the dividing of the skin. *Lib. de vulner. cap.*

Moreover we may, before we have cut the skin acroſs, or laid bare the bone, give a gueſs by our feeling, whether the skull be broken, or no, if we by preſſing down our fingers neer the wound ſhall perceive the bone either to ſtand up, or be preſſed down otherwiſe than it ſhould naturally be.

The skin being cut croſwiſe and the bone laid bare, if the fracture be not obvious to the eye, you muſt try with your probe, which muſt neither be too thin nor too ſharp, leſt by falling into ſome naturall cranies, it may cauſe us to ſuſpect without any cauſe that the bone is broken; neither let it be too thick, leſt the little clifts may deceive you. If when your probe comes to the bone, it meets with nothing but that which is ſmooth and ſlippery, it is a ſign that it is whole.

What a probe muſt be uſed in ſearching for a fracture.

But on the contrary if you find it any thing rough, ſpecially where there is no ſuture, it ſhews the bone is broken. But let the Chirurgeon conſider, that the fractures are not ſeldom upon the ſutures; and that the ſutures have not alwayes one and their naturall ſite; as alſo it often comes to paſs that the broken cleft, or cut bone can neither be perceived by your ſight, nor inſtrument; wherefore if you think there is any ſuch thing, by the rationall ſigns above mentioned; anoint the place with writing Ink, and oyl, and ſo you ſhall find the crack or clift, by the means we ſhall ſhew you hereafter.

When you are certain of the fracture, then you muſt diligently conſider the greatneſs of the diſeaſe, and apply medicines ſpeedily. Verily when a fracture chances to light upon any ſuture, the diſeaſe is hard to be known, unleſs the fracture be very great, becauſe the ſutures by their clifts and roughneſs reſemble fractures; wherefore *Hippocrates* ſaith that he was deceived by them. Now having briefly delivered the differences and ſigns of a broken skull, it is time to come to the ſeverall kinds thereof, with a Fiſſure.

*Lib. 5 Epid. in Autonomus* of *Omilun Hippocrates* was deceived by the ſutures.

## CHAP. IIII.

*Of a Fiſſure, being the firſt kind of a broken Skull.*

IF the Chirurgeon by the forementioned ſigns ſhall know that the skull is broken, or crackt, and if the wound made in the muſculous skin ſhall not be thought ſufficient for ordering the fiſſure, then muſt he ſhave off the hair, and cut with a razour, or inciſion knife, the muſculous skin with the *Pericranium* lying under it, in a triangular or quadrangular figure to a proportionable bigneſs, alwayes ſhunning as much as in him lyes, the ſutures and temples; neither muſt he fear any harm to enſue hereof; for it is far better to bare the bone by cutting the skin, then to ſuffer the kind & nature of the fracture to remain unknown, by a too religious preſervation of the skin; for the skin is cured without any great ado, though pluckt off to no purpoſe.

Upon what occaſion the hairy ſcalpe muſt be cut.

*Celſus.*

For it is much more expedient (in *Hippocrates* opinion) to cure diſeaſes ſafely and ſecurely, though not ſpeedily, than to do it in a ſhorter time with fear of relapſe and greater inconveniencies. Let this diſſection be made with a razour, or ſharp knife, and if there be any wound made in the skin by the weapon, let one of your inciſions be made agreeable thereto.

*Hippocrates.*

*A Razour, or Inciſion Knife.*

The manner how to pull the hairy ſcalp from the broken skull.

Now therefore the Muſculous skin together with the *Pericranium* muſt be divided and cut with a ſharpe razour preſſed and guided with a ſtrong and ſteddy hand; then it muſt be ſo pluckt from the bone, or skull lying under it, that none thereof remain upon the bone; for if it ſhould be rent or torn with the Trepan, it would cauſe vehement pain with inflammations. You muſt begin to pull it back at the corners of the lines croſſing each other with right angles, with this Chiſſell whoſe figure you ſee here expreſſed.

*A Chiſſell or Inſtrument to pull back or or ſeparate the* Pericranium *from the skull.*

Then you muſt fill all the wound with boulſters of fine ſoft lint, that ſo the lips may be kept further a ſunder. But you ſhall apply upon it medicines fit to ſtanch blood. But if it come ſo to paſs that the blood flows forth ſo violently, that it can be ſtayed by no means, the veſſell it ſelf muſt be bound, after this manner.

The manner to bind a veſſell in caſe of too much blee ding.

Firſt thruſt through the muſculous skin on the outſide with a needle and thred, then thruſt the needle back again; then tye the thred on a knot on the outſide, but firſt put ſome lint rolled up to the bigneſs of a Gooſe quill between the thred and the hairy ſcalp on both ſides thereof, leaſt the ſtrait twitching of of the thred which may ſerve to ſtay the bleeding, may cut and tear the skin, or cauſe pain: then muſt you raiſe his head ſomewhat higher.

A Hiſtory.

I have lately tried, and performed this upon a certain Coach-man, who thrown from the Coach upon his head on a pavement of free ſtone, exceedingly bruiſed the hind part of the *Bregma*, for which cauſe it was fit to open the muſculous skin, with a croſs inciſion, both that the congealed blood might be preſſed out, as alſo that the fracture (if there were any) might be obſerved. But an Artery being cut in performance hereof, when as the Chirurgeon who was there preſent could not ſtay the blood leaping out with violence; and the Coachman already had loſt ſo great a quantity thereof, that his ſtrength was ſo much decayed, that he could not ſtir himſelf in his bed, or ſcarſe ſpeak: I being called, ſhewed them by experience, that whereas aſtringent medicines were uſed before to no purpoſe, it was better to ſtay the bleeding by binding the veſſell, than to let the Patient dye for a childiſh fear of pricking him.

A way to find a fracture in the skull, when it preſents not it ſelf to the view at the firſt.

But that we may return to our former matter, the Chirurgeon ſhall the next day conſider with what kind of fracture the bone is hurt; and if no ſigns of hurt appear to the eyes, nor be perceived with your fingers and probe, yet ſome of the rationall ſigns may cauſe one to have a conjecture that there is a fracture: Then you muſt anoint as we told you before, the bared done with writing Ink, and a little oyl of Roſes; that the cleft or crack may be dyed or coloured therewith, if that there be any there. Then the next dreſſing you muſt dry the bone with a linnen cloth, and ſcrape off the Ink, and oyl, with ſcraping Inſtruments made for the purpoſe, if any part thereof ſhall be ſunk into the bone; for if there be any crack, it will be black; Wherefore you muſt continue ſcraping untill no ſign of the fiſſure remain, or elſe untill you come even to the *Dura Mater*. But that he may be more certain whether the fiſſure pierce through both the Tables of the skull, he muſt bid the Patient, that ſtopping his noſe and mouth, he ſtrive to breath with a great indeavour. For then bloody matter or *ſanies* will ſweat through the fiſſure: For the breath driven forth of the cheſt, and prohibited paſſage forth, ſwells and lifts up the ſubſtance of the brain, and the *Meninges*, whereupon that frothy humidity and *Sanies* ſweats forth. Therefore then the bone muſt be cut even to the *Dura Mater*, with *Radula* and other ſcraping Inſtruments, fit for that purpoſe, yet ſo as you hurt not the membrane; but if the fiſſure ſhall be ſomewhat long, it will not be convenient to follow it all the extent thereof: for nature will repair and reſtore the remnant of the fiſſure by generating a *Callus*; beſides alſo the Chirurgeon according to *Celſus* opinion muſt take away as little of the bone as he can, becauſe there is nothing ſo fit to cover the brain, as the skull. Therefore it ſhall ſuffice to make a paſſage, whereby the blood and *Sanies* may paſs and be drawn forth, leſt that matter being ſuppreſſed may corrupt the bone, and cauſe an inflammation in the brain. But the broken bone muſt be taken forth within three dayes if it be poſſible, eſpecially in Summer, for fear of inflammation. Yet I have often taken forth with a Trepan and with Strapers the bones of the skull, after the ſeventeenth day, both in Winter and Summer; and that with happy ſucceſs. Which I have the rather noted, leſt any ſhould at any time, ſuffer the wounded to be left deſtitute of remedy: for it is better to try a doubtfull remedy than none: Yet the By-ſtanders ſhall be admoniſhed and told of the danger, for many more dye who have not the broken bones of the skull taken out, than thoſe that have.

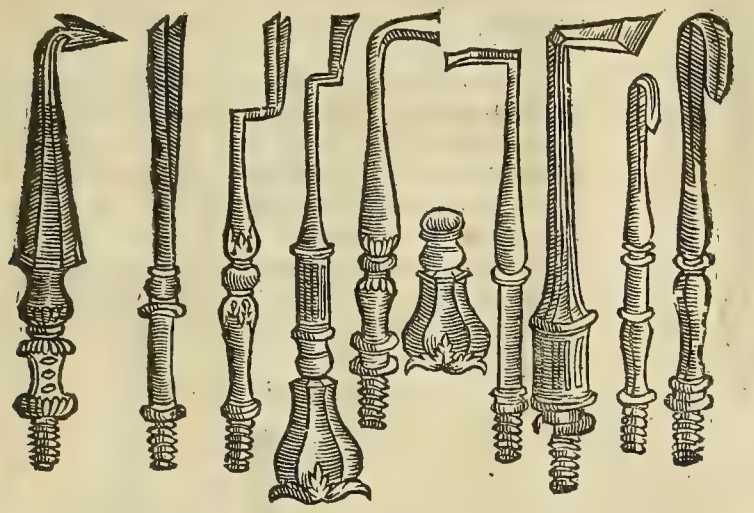
A ſign that both the Tables are broken.

You may uſe the Trepan after the tenth day.

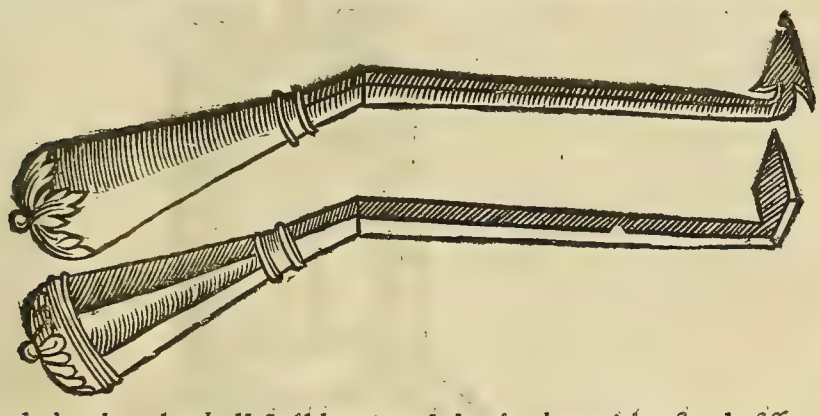
But

But the Inſtruments, with which the wounded or cleft bones may be cut out are called *Scalpri* or *Radulæ*, of which I have cauſed divers ſorts to be here decyphered, that every one might take his choice, according to his mind, and as ſhall be beſt for his purpoſe. But all of them may be ſcrued into one handle, the figure whereof I have exhibited.

Radulæ *or* Scalpri, *(i) Shavers or Scrapers.*



Radulæ *of another form, for the better cutting of the greater bones.*



To conclude, when the skull ſhall be wounded or broken with a ſimple fiſſure, the Chirurgeon muſt think he hath done ſufficient to the Patient, and in his Art, if he ſhall divide the bone and dilate the fiſſure or cleft with the deſcribed Inſtruments, though he have uſed no Trepan, although the fiſſure pierce through both the Tables. But if it doth not exceed the firſt Table, you muſt ſtay your ſcrapers as ſoon as you come to the ſecond, according to the opinion of *Paulus:* but if the bone ſhal be broken & ſhivered into many peeces, they ſhall be taken forth with fit Inſtruments, uſing alſo a Trepan if need ſhall require, after the ſame manner as we ſhall ſhew you hereafter.

*It is ſufficient in a ſimple fiſſure to dilate it with your Scalpri only and not to Trepan it.*

## CHAP. V.

*Of a Contuſion, which is the ſecond ſort of fracture.*

WHEN *Ecchymoſis*, that is, effuſion of blood, preſently concreting under the muſculous skin, without any wound, is oft cauſed by a violent contuſion. This Contuſion if it ſhall be great, ſo that the skin be divided from the skull, it is expedient, that you may make an inciſion, whereby the blood may be evacuated and emptied. For in this caſe you muſt wholly deſiſt from ſuppurative medicines (which otherwiſe would be of good uſe in a fleſhy part) by reaſon that all the moiſt things are hurtfull to the bones, as ſhall be ſhown hereafter.

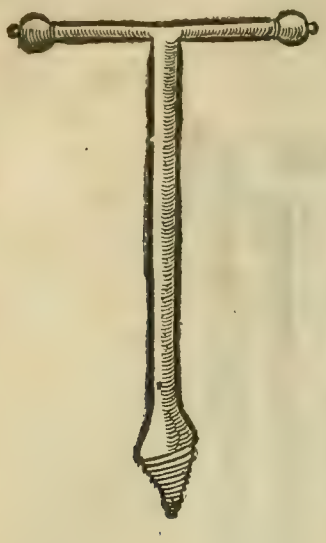
*What an Ecchymoſis is.*

*How a contuſion of the skull muſt be cured.*

Such like Contuſions more frequently happen in children, being eaſily perceived by the ſoftneſs, and inundation of the contuſed part: forth of which oft-times when I have opened them with my inciſion knife, ſerous, clotted and blackiſh blood hath iſſued. The reſidue of the cure is perfected by moderate compreſſion of the part, and drying medicines. Moreover the skul of a child, may be preſſed down, by a great contuſion, even as we ſee it happens in thin veſſels of braſs, lead, or pewter, for oft-times by the preſſure of your finger, they are ſo dented in, that the print thereof remains; yet ſometimes they fly back of themſelves, and again acquire their former plainneſs and equability, which alſo happens in the bones of children, women and ſuch as are ſoft, humid, & phlegmatick. But if the bones do not ſpring back of themſelves, you muſt apply a cupping-glaſs with a great flame; withall command the Patient, to force his breath up as powerfully as he can, keeping his mouth and noſe

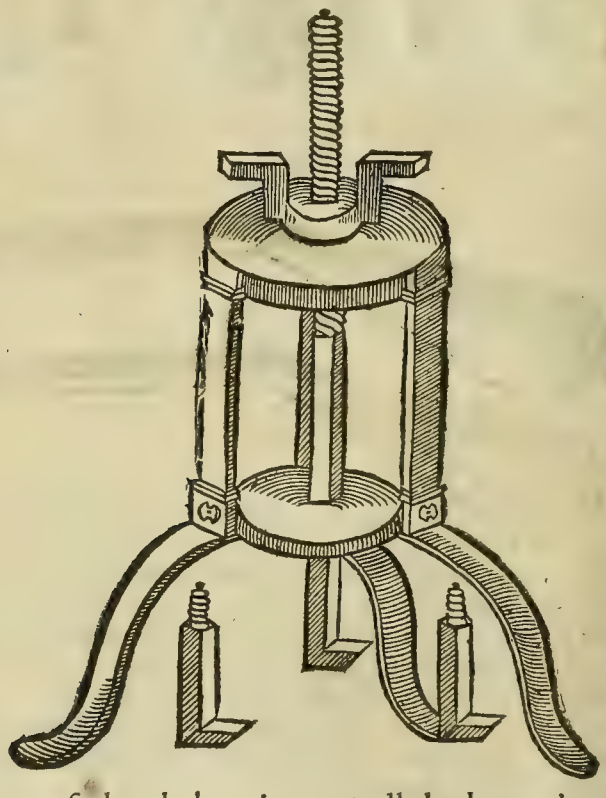
*Different cures of a depreſſed skull.*

cloſe ſhut; for thus there will be hope, to reſtore the depreſſed bone to its place, by the ſpirits forc'd upwards to the brain and skull, by the powerfull attraction of the cupping-glaſs. But if ſo be that the bone cannot by this means be reſtored, then you muſt make an inciſion in the skin, and faſten ſuch a Trepan, as you ſee here delineated, into the depreſt, or ſetled part of the bone, and ſo pull it directly upwards, juſt as we ſee Coopers raiſe the ſtaves of their cask, when they are ſunk too much in.



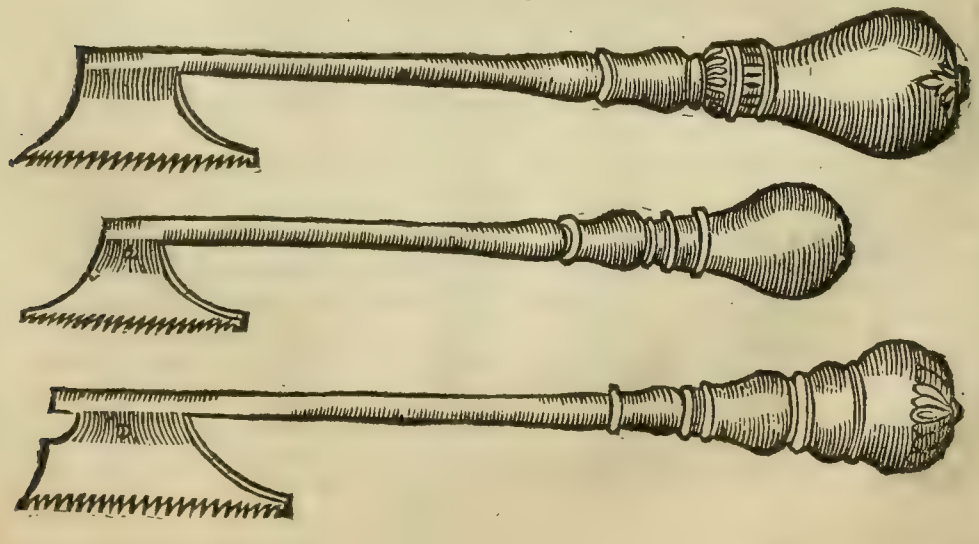
But if the bone ſhall be too ſtrong, thick, and denſe, ſo that this Inſtrument will not ſerve to pluck it forth; then you muſt perforate the skull, in the very center of the depreſſion, and with this threefold Inſtrument, or Levatory put into the hole, lift up and reſtore the bone to its naturall ſite; for this ſame Inſtrument is of ſtrength ſufficient for that purpoſe. It is made with three feet, that ſo it may be applyed to any part of the head which is round; but divers heads may be fitted to the end thereof according as the buſineſs ſhall require, as the figure here placed doth ſhew.

*A three footed Levatory.*



But if at any time it comes to paſs, that the bone is not totally broken or depreſt, but only on one ſide; it will be fit, ſo to lift it up, as alſo to make a vent for the iſſuing out of the filth, to divide the skul with little ſaws like theſe, which yee ſee here expreſſed; for thus ſo much of the bone, as ſhall be thought needfull, may be cut off without compreſſion, neither will there be any danger of hurting the brain or membrane with the broken bone.

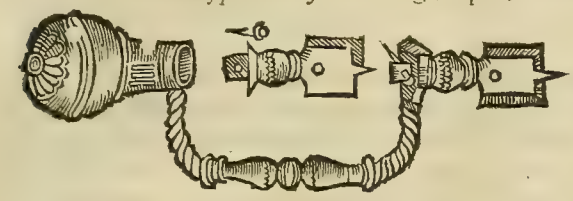
*The figures of Saws fit to divide the skull.*



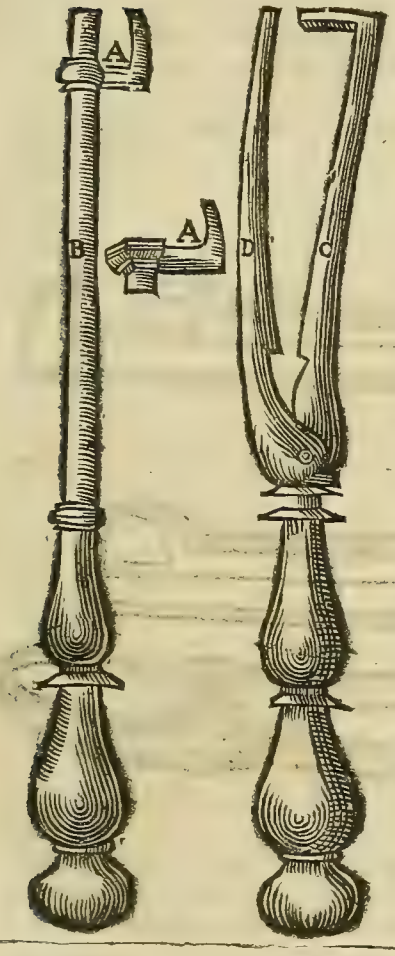
But

But if by ſuch ſigns as are preſent, and ſhall appear, we perceive or judg that the contuſion goes but to the ſecond Table, or ſcarſe ſo far; the baring or taking away of the bone, muſt go no further than the contuſion reaches; for that will be ſufficient to eſchew and divert inflammations and divers other ſymptomes. And this ſhall be done with a ſcaling or Deſquamatory Trepan, (as they term it) with which you may eaſily take up as much of the bone, as you ſhall think expedient: And I have here given you the figure thereof.

*A Deſquamatory or Scaling Trepan.*



*A delineation of other Levatories.*




A A. *Shews the point or tongue of the Levatory, which muſt be ſomewhat dull, that ſo it may be the more gently and eaſily put between the* Dura Mater *and the ſkull, and this part thereof may be lifted up ſo much by the head or handle taken in your hand, as the neceſſity of the preſent operation ſhall require.*

B. *Intimates the body of the Levatory, which muſt be four ſquare, leſt the point or tongue put thereon ſhould not ſtand faſt, but the end of this Body muſt reſt upon the ſound bone, as on a ſure foundation.*

*The uſe thereof is, thus; put the point or tongue under the broken or depreſſed bone, then lift the handle up with your hand, that ſo the depreſſed bone may be elevated.*

C. *Shews the firſt Arm of the other Levatory, whoſe crooked end muſt be gently put under the depreſſed bone.*

D. *Shews the other Arm, which muſt reſt on the ſound bone, that by the firm ſtanding thereof, it may lift up the depreſſed bone.*

## CHAP. VI.

*Of an Effracture, depreſſion of the bone, being the third kind of Fracture.*

BEfore I come to ſpeak of an Effracture, I think it not amiſs to crave pardon of the curteous and underſtanding Reader, for this reaſon eſpecially, that as in the former Chapter, when I had determined and appointed to ſpeak of a Contuſion, I inſerted many things of a Depreſſion; ſo alſo in this chapter of an Effracture, I intend to intermixe ſomething of a Contuſion; we do not this through any ignorance of the thing it ſelf; for wee know that it is called a Contuſion, when the bone is depreſt and cruſht, but falls not down. But an Effracture is when the bone falls down and is broken by a moſt violent blow. But it can ſcarſe come to paſs, but that the things themſelves muſt be confounded and mixt, both as they are done; and alſo when they are ſpoken of: ſo that you ſhall ſcarſe ſee a Contuſion without an Effracture, or this without that. Therefore the bones are often broken off and driven down with great and forcible blows, with clubs whether round or ſquare, or by falling from a high place directly down, more or leſſe according to the force of the blow, kind of weapon, and condition of the part receiving the ſame: Wherefore you muſt be provided with diverſity of remedies and inſtruments to encounter therewith. Wherefore admit the bone is preſſed down, and ſhivered into many pieces, now for that theſe ſplinters need not be taken out with a Trepan, you may do the buſineſs with Levatories made and neatly faſhioned for that purpoſe; ſuch as theſe, which are here expreſt.

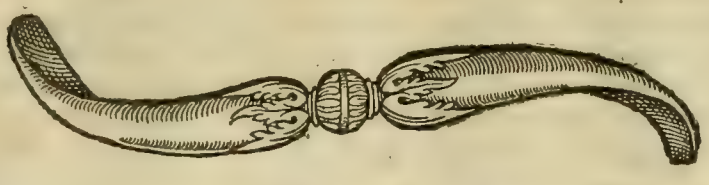
What a contuſion is.

What an Effracture is.

The cauſe of Effractures.

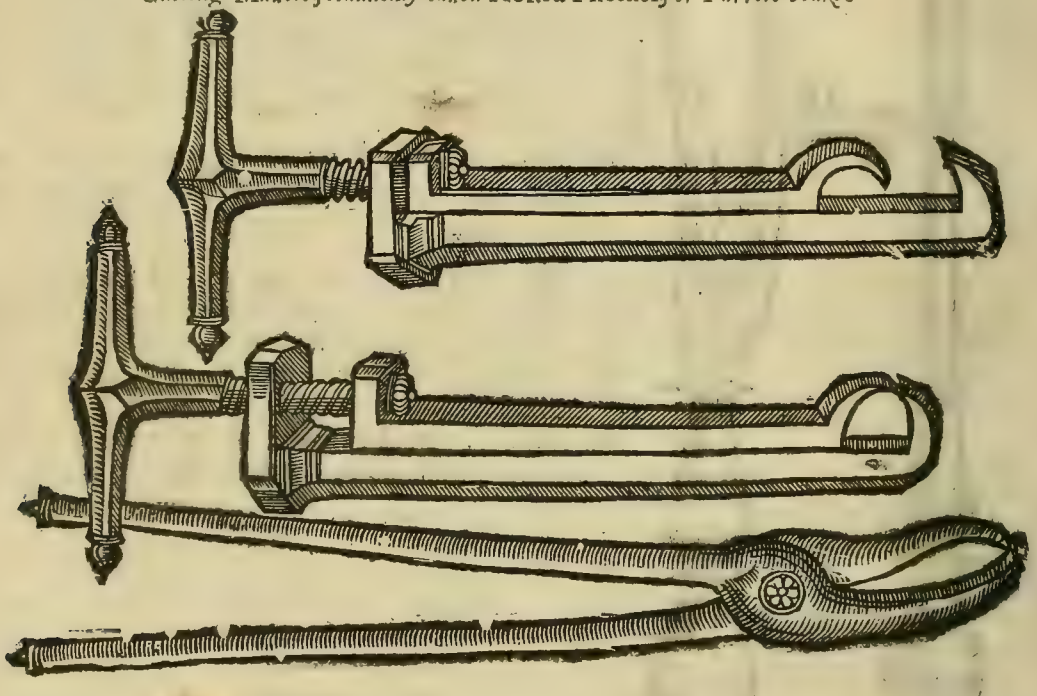
The cure.

*A Levatorie.*



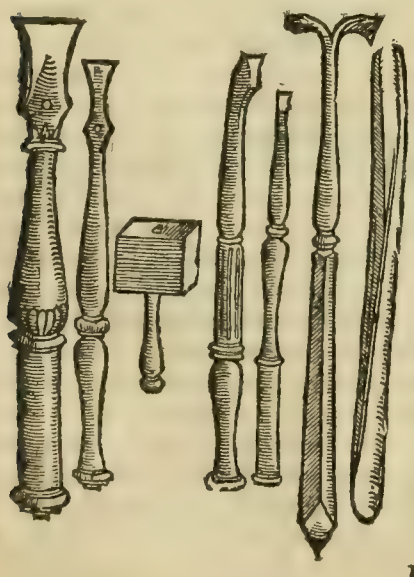
But we muſt have ſpeciall care, leſt that in pulling and taking out of theſe ſcales and ſplinters, we hurt the membranes. Theſe ſcales are ſometimes very rough and prickly, ſo that they cannot touch the *Meninges* without offence; but ſomewhiles the buſineſs is ſo intricate, that they cannot be taken out unleſs by enlarging the fracture. Wherefore in this caſe, if there be a ſpace ſo large, as that the ends of theſe mullets may enter, you may eaſily ſhear off ſo much of the bone as ſhal be neceſſary and requiſite for the taking away of theſe ſcales, without any aſſiſtance of the Trepan, which I have done very often and with good ſucceſs; for the operation performed by theſe mullets is far more ſpeedy and ſafe, than that with the Trepan; and in the performance of every operation, the chief commendation is given to ſafeneſs and celerity.

*Cutting Mullets, commonly called* Roſtra Pſittaci, *or* Parrots beaks.



Moreover I have thought good here to give you the figures of chiſſels, ſcrapers, pincers, together with a leaden mallet, becauſe ſuch inſtruments are not only very neceſſary to take forth the ſcales of bones which are broken, but alſo to plain and ſmooth thoſe which remain whole.

*The Figures of Scrapers, Pincers, a leaden mallet, &c.*



But here you muſt note, that a Trepan, nor Levatorie, muſt never be applyed to a bone quite broken, leſt the membranes lying under it be hurt by the compreſſion thereof. Therefore you muſt apply them to a ſound bone, but as neer as you can to the fracture, ſo that you take away as little of the skull as is poſſible, leſt the brain deſpoiled of its bony cover, take ſome harm thereby. Neither effractures, nor yet fiſſures, if they be of ſome length, muſt be followed to their ends, but think your ſelf well, if you have made a paſſage for the iſſuing forth of the *Sanies* or filth, & have drawn forth that bone, which pricked the membranes. For nature is accuſtomed by generating a *Callus* to ſoulder, or unite the bones of the skul, as it alſo doth theſeof the other parts; as we have read it written by *Hippocrates* and *Galen*; for which purpoſe it hath by ſingular providence repleniſhed both the tables of the skull, with a certain alimentary and bloody matter, that with this as with marrow it might repair the loſs and defect of the bone.

*Hip. lib. de vuln. cap. Gal. lib 6. meth. cap. ult.*

The

The truth hereof was lately manifeſted in the ſervant of Maſter *Grolo*, who had an Effracture on the coronall bone, by a grievous blow, given him with the foot of a Mule; which when I underſtood, I divided the muſculous skin with a three cornered ſection in that place, with an intent to apply a Trepan there; wherefore the day following, the bone being bored, and when I thought to draw it forth, yea verily endeavoured to pluck it forth, being already divided with the Trepan, I perceived a fearefull production of an Effracture; by the moveableneſs of the bone ſhaking under my hand; for it reached from the midſt of the forehead, to the leſſer corner of the eye. Wherefore omitting both my determination and endeavour to pull it forth, I thought I ſhould do ſufficiently for the patient, if I ſhould only raiſe up the bone which was depreſt; for ſo it did not trouble the *Craſſa meninx* by preſſing it, and the matter, and filth, were let forth by a paſſage made with a ſaw. So that in concluſion, he recovered perfectly, but that he loſt one of his eyes which was adjoyning to the fracture. A Hiſtory.

## CHAP. VII.

### *Of a Seat, being the fourth kind of a broken Scull.*

*Hippocrates* calls a Seat that kind of Fracture of the ſcull, when the weapon ſo falls upon the ſcull, that the fracture retaining the print thereof, is neither ſtretched forth any further, nor contracted to any leſſe ſpace. What a Seat is.

And ſeeing there be many forms hereof, they all whether they ſhall be ſuperficiary, or ſhall pierce even to the *Diploe*, or elſe paſs through both the Tables, whether it be with any loſs of the bony ſubſtance, whether it run long wayes, or elſe be but ſhort; or otherwiſe are dilated to ſome breadth, or elſe be but narrow; whether they ſhall be done with a cut, or with a prick with a dagger, ſtyletto, lance or other kind of weapon, whether they ſhall have this or that accident joined with them, I ſay all of them, how many and various ſoever they be, ought and muſt be cured by ſome of the formerly deſcribed Inſtruments and means. Yet this muſt be noted, which as yet we have not remembred, that if it happen by a violent ſtroak, & great wound, that a portion of the bone is wholly ſo cut off, that it is clean ſevered from the reſt of the ſcull, and hang only by the *Pericranium* and muſculous skin; yet you muſt not pluck it from the *Pericranium*, and caſt it away as unprofitable, but reſtore it to its proper ſeat and place, ſo by the force of nature, to be glewed by a *Callus*, as *Celſus* hath obſerved. The cure. *Lib. 8. cap. 4.*

I have tryed the truth of this experiment, in captain *Hydron*, not very long agoe. He had the middle part of the *Os Coronale*, of the bredth, and length of three fingers, ſo cut with a ſharp ſword, that it ſtuck not to the reſt of the bone; but ſcarſe adhering to the *Pericranium* and muſculous skin; but lay turned down over his face, ſo that the *Dura Mater* was plainly ſeen; wherefore I prepared to pluck it from the skin, and caſt it away, but that I remembred *Hippocrates* precept, where he bids, that the Brain ſhould not be robbed of its cover and left bare. Wherefore firſt of all I wiped away the blood which was fallen upon the *Dura Mater*, whoſe motion you might plainly ſee, then I reſtored the portion of the bone to its place, and faſtned it on the upper ſide with a ſuture conſiſting of three ſtitches; and that the reſidue of the matter might have paſſage forth, I filled the places between each ſtitch with lint, by this means, he by the mercie of God recovered, though at the ſame time he received many other large wounds in his body; which is a certain experiment, that we muſt caſt away no part of the ſcull, nor of the *Pericranium*, no not of the muſculous skin, unleſs neceſſity urge; therefore much leſs to leave the brain naked and deſpoiled of its coverings. A Hiſtory.

## CHAP. VIII.

### *Of a* Reſonitus, *or Counter-fiſſure, being the fifth kind of Fracture.*

Sometimes the fracture is made in the part oppoſite to that which received the blow; as if the right ſide be ſtruck, the left is cloven; this kind of fracture is very dangerous, becauſe we cannot find it out by any certain ſign, as it is written by *Hippocrates Lib. de vuln. Capitis*. Wherefore if at any time the patient dye of ſuch a fracture, the Chirurgeon muſt be pardoned. What a *Reſonitus* is.

And although *Paulus Ægineta* laugh at this kind of fracture and thinks that it cannot happen to a mans head, as that which is hard and full, as it happens in empty glaſs bottles, yet I have ſometimes ſeen and obſerved it. *Lib. 6. cap. 90.*

Neither is their reaſon of any validity, who think nature therefore to have framed the head of many bones knit together by ſutures, leſt the fracture of the one ſide, ſhould be ſtretched to the other. For peradventure this may take place, in ſuch as have expreſs ſutures, ſeated and framed according to nature. But it takes no place in ſuch as either want them, or have them not ſeated according to nature, or have them very cloſe and ſo defaced that it may ſeem one bone growne together of many; This ſhall be made manifeſt by recitall of the following Hiſtorie. In whom this fracture may take place in divers bones of the ſcull.

A ſervant of *Maſſus* the Poſt-maſter had a grievous blow with a ſtone, upon the right *Bregma*, A Hiſtory.

*Bregma*, which made but a ſmall wound, yet a great contuſion and Tumor. Wherefore that it might more plainly appear, whether the bone had received any harme, and alſo that the congealed blood might be preſſed forth, the wound was dilated, the skin being opened by *Theodore Hereus* the Chirurgeon, who as he was a skilfull workman and an honeſt man, omitted nothing which Art might do for his cure. When he had divided the skin, the bone was found whole, although it was much to be feared, that it was broken, becauſe he fell preſently to the ground with the blow, vomited and ſhewed other ſignes of a fractured ſcull; ſo it happened that he dyed on the one and twentieth day of his ſickneſs. But I being called to learn, and ſearch how he came by his death, dividing the ſcul with a ſaw, found in the part oppoſite to the blow, a great quantity of *Sanies* or bloody matter, and an Abſceſs in the *Craſſa meninx*, and alſo in the ſubſtance of the very brain, but no ſutures, but the two ſcaly ones. Therefore that is certain which is now confirmed by the authority of *Hippocrates*; as alſo by reaſon and experience, that a blow may be received on the one ſide, and the bone may be fractured on the oppoſite, eſpecially in ſuch as have either no ſutures, or elſe ſo firmly united and cloſed, that they are ſcarſe apparent.

The *Reſonitus* may be in the ſame bone of the ſcull.

Neither is it abſurd, that the part, oppoſite to that which received the ſtroak, of the ſame bone and not of divers bones may be cloven, and in thoſe men who have their ſculs well made, and naturally diſtinguiſhed and compoſed with ſutures; and this both was, and is, the true meaning of *Hippocrates*. That this may be the better underſtood, we muſt note that the oppoſite part of the ſame bone may be underſtood two manner of wayes. Firſt, when the fracture is in the ſame ſurface of the ſmitten bone, as if that part of one of the bones of the *Bregma* which is next to the Lambdall ſuture be ſmitten, and the other part next to the Coronall ſuture be cloven. Secondly, when as not the ſame ſuperficies and table which receives the blow, but that which lyes under it is cleft, which kind of fracture I obſerved,

A Hiſtory.

in a certain Gentleman a Horſman of Captain *Stempans* troop; He in defending the breach of the wall of the Caſtle of *Hiſdin* was ſtruck with a Musket bullet upon the *Bregma*, but had his helmet on his head; the bullet dented in the helmet but did not break it, no nor the muſculous skin, nor ſcull, for as much as could be diſcerned, yet notwithſtanding he died apoplectick upon the ſixt day after.

But I being very deſirous to know, what might be the true cauſe of his death, dividing his ſcull; obſerved that the ſecond table was broken, and caſt off ſcales and ſplinters, wherewith as with needles the ſubſtance of the brain was continually pricked, the firſt and upper table being whole, for all this: I afterwards ſhewed the like example to *Capellanus* and *Caſtellanus* the King and Queens chief Phyſitians in the expedition of *Roane*.

Why *Hippocrates* ſet downe no way to cure a *Reſonitus*.

But *Hippocrates* preſcribes no method of curing this fifth kind of fracture, by reaſon he thinks it cannot be found out by any circumſtance, whence it happens that it is for the moſt part deadly: Yet muſt we endeavour to have ſome knowledg and conjecture of ſuch a fracture, if it ſhall at any time happen. Wherefore having firſt diligently ſhaven away the haire, we muſt apply an Emplaiſter of Pitch, Tar, Wax, Turpentine, the powder of *Iris*, or flower deluce roots, and maſtich; now if any place of the head ſhall appeare more moiſt, ſoft and ſwoln, it is ſomewhat likely that the bone is cleft in that place, ſo that the Patient, though thinking of no ſuch thing, is now and then forced to put his hand to that part of the ſcull. Confirmed with theſe and other ſigns formerly mentioned, let him call a counſell of learned Phyſitians; and foretell the danger to the Patients friends which are there preſent, that there may no occaſion of calumnie remain, then let him boldly perforate the ſcull; for that is far better, than forſake the Patient ready to yeeld to the greatneſs of the hidden diſeaſe, and ſo conſequently to dye within a ſhort while after. There are foure ſorts, or conditions of fractures, by which the Chirurgeon may be ſo deceived, that when the ſcull is broken indeed, yet he may think there is no fracture. The firſt is when the bone is ſo depreſſed, that it preſently riſes up into its true place, and native equability. The ſecond is when the fiſſure is only capillary. The third is when the bone is ſhaken on the inſide, the utter ſurface nevertheleſs remaining whole, foraſmuch as can be diſcerned. The fourth is, when the bone is ſtricken on the one ſide and cleft on the other.

The manner to know when the ſcull is fractured by a *Reſonitus*.

## CHAP. IX.

### *Of the moving, or Concuſſion, of the Brain.*

*Gal. lib. 2. de comp. medic. cap. 6. & Com. ad Aph. 58. ſect. 7.*

BEſides the mentioned kinds of fractures by which the brain alſo ſuffers; there is another kind of affect beſides nature, which alſo aſſailes it by the violent incurſion of a cauſe, in like manner, externall; they call it the Commotion or ſhaking of the brain, whence Symptomes like thoſe of a broken ſcull enſue. Falling from aloft upon a ſolid and hard body, dull and heavy blows, as with ſtones, clubs, ſtaves, the report of a peece of Ordnance, or crack of Thunder, and alſo a blow with ones hand.

*Lib. 5. Epidem.*

Thus as *Hippocrates* tells, that beautifull damoſell the daughter of *Nerius*, when ſhe was twenty yeeres old, was ſmitten by a woman, a friend of hers, playing with her, with her flat hand upon the fore part of the head, and then ſhe was taken with a giddines, and lay without breathing, and when ſhe came home, ſhe fell preſently into a great Feaver, her head

aked,

aked, and her face grew red. The seventh day after there came forth some two or three Ounces of stinking and bloody matter about her right eare, and she seemed somewhat betttr and to be at somewhat more ease. The feaver encreased again, and she fell into a heavy sleepinesse, and lost her speech, and the right side of her face was drawn up, and she breathed with difficulty, she had also a convulsion and trembling; both her tongue failed her, and her eyes grew dull, on the ninth day she died. But you must note, that though the head be armed with a helmet, yet by the violence of a blow, the Veines, and Arteries may be broken, not only these which pass through the sutures, but also those which are dispersed between the two tables in the Diploe, both that they might bind the *Crassa meninx* to the skull, that so the brain might move more freely, as also that they might carry the alimentary juyce to the brain wanting marrow, that is, blood to nourish it, as we have formerly shewed in our Anatomie.

The vessels of the brain broken by the commotion thereof.

But from hence proceeds the efflux of blood running between the skull, and membranes, or else between the membranes and brain; the blood congealing there, causeth vehement pain, and the eyes become blind, vomiting is caused, the mouth of the stomach suffering together with the brain, by reason of the Nerves of the sixt conjugation, which run from the brain thither, and from thence are spread over all the capacity of the ventricle; whence becoming a partaker of the offence it contracts it self, and is presently as it were overturned; whence first, these things that are contained therein are expelled, and then such as may flow, or come thither from the neighbouring and common parts, as the Liver and Gall; from all which choler, by reason of its naturall levity and velocity, is first expelled and that in greatest plenty; and this is the true reason of that vomiting, which is caused and usually followes upon fractures of the skull and concussions of the brain.

Signes. *Celsus.*

The cause of vomiting when the head is wounded.

Within a short while after inflammation seizes upon the membranes and brain it self, which is caused by corrupt and putrid blood proceeding from the vessels broken by the violence of the blow, and so spread over the substance of the brain. Such inflammation communicated to the heart, and whole body by the continuation of the parts, causes a feaver. But a feaver, by altering the brain causes Doting; to which if stupidity succeed, the Patient is in very ill case, according to that of *Hippocrates*; Stupidity, and doting, are ill in a wound, or blow upon the head. But if to these evills, a sphacell, and corruption of the brain ensue, together with a great difficulty of breathing, by reason of the disturbance of the Animall faculty, which from the brain imparts the power of moving to the muscles of the Chest, the instruments of respiration, then death must necessarily follow.

*Aph. 14. sect. 7.*

A great part of these accidents appeared in King *Henry* of happy memory, a little before he dyed. He having set in order the affaires of France, and entred into amitie with the neighbouring Princes, desirous to honour the marriages of his daughter, and sister, with the famous and noble exercise of Tilting, and he himself running in the Tilt-yard, with a blunt lance received so great a stroak upon his brest, that with the violence of the blow, the visour of his helmet flew up, and the trunchion of the broken Lance hit him above the left eye-brow, and the musculous skin of the forehead was torn even to the lesser corner of the left eye, many splinters of the same; trunchion being struck into the substance of the fore mentioned eye, the bones being not touched or broken; but the brain was so moved and shaken, that he dyed the eleaventh day after the hurt. His skull being opened after his death, there was a great deal of blood found between the *Dura*, and *Pia Mater*, poured forth in the part opposite to the blow, at the middle of the future of the hind part of the head; & there appeared signs by the native colour turned yellow, that the substance of the brain was corrupted, as much as one might cover with ones thumb. Which things caused the death of the most Christian King, and not only the wounding of the eye, as many have falsly thought. For we have seen many others, who have not dyed of farre more grievous wounds in the eye.

A History.

What was the necessary cause of the death of King Henry the second of France.

The history of the Lord Saint *Iohns* is of late memory: he in the Tilt-yard, made for that time before the Duke of *Guises* house, was wounded with a splinter of a broken Lance, of a fingers length and thickness, through the visour of his Helmet, it entring into the Orbe under the eye, and piercing some three fingers bredth deep into the head; by my help and Gods favour he recovered, *Valeranus* and *Duretus* the Kings Physitians and *James* the Kings Chirurgeon assisting me.

A History.

What shall I say of that great and very memorable wound of *Francis* of *Loraine* the Duke of *Guise*? He in the sight of the City of *Bologne* had his head so thrust through with a Lance, that the point entring under his right eye by his nose, came out at his neck between his ear and the *Vertebræ*, the head or Iron being broken and left in by the violence of the stroak, which stuck there so firmly, that it could not be drawn or plucked forth, without a pair of smiths pincers. But although the strength and violence of the blow was so great, that it could not be without a fracture of the bones, a tearing and breaking of the Nerves, Veines, Arteries and other parts; yet the generous Prince by the favour of God recovered.

A History.

By which you may learn, that many dye of small wounds; and other recover of great, yea, very large and desperate ones. The cause of which events is chiefly and primarily to be attributed to God, the author and preserver of mankind; but secondarily to the variety

Why some die of small wounds and others recover of great.

variety and condition of temperaments. And thus much of the commotion or concuſſion of the brain; whereby it happens that although all the bone remains perfectly whole, yet ſome veins broken within by the ſtroak, may caſt forth ſome blood upon the membranes of the brain, which being there concrete may cauſe great pain, by reaſon whereof it blinds the eys; if ſo be that the place can be found againſt which the pain is, and when the skin is opened, the bone look pale, it muſt preſently be cut out, as *Celſus* hath written. Now it remains, that we tell you how to make your prognoſticks, in all the forementioned fractures of the skul.

## CHAP. X.

### *Of Prognoſticks to be made, in fractures of the skull.*

*Hip. de vul. cap.* WE muſt not neglect any wounds in the head, no not theſe which cut or bruiſe but only the hairly ſcalp; but certainly much leſs, theſe which are accompanied by a fracture in the skull; for oft-times all horrid ſymptomes follow upon them, and conſequently death it ſelf, eſpecially in bodies ful of ill humors, or of an ill habit, ſuch as are theſe which are affected with the *Lues venerea*, leproſie, dropſie, Pthiſick, conſumption, for in theſe, ſimple wounds are hardly or never cured; for union is the cure of wounds, but this is not performed, unleſs by the ſtrength of nature, and ſufficient ſtore of laudable blood: but thoſe which are ſick of hectick feavers and conſumptions, want ſtore of blood, and thoſe bodies which are repleat with ill humors, and of an ill habit, have no afflux or plenty of laudable blood: but all of them want the ſtrength of nature; the reaſon is almoſt the ſame in thoſe alſo which are lately recovered of ſome diſeaſe.

Whether the wounds of children, or old people are better to heal.

Thoſe wounds which are bruiſed are more difficult to cure, than thoſe which are cut. When the skull is broken, then the continuity of the fleſh lying over it muſt neceſſarily be hurt and broken, unleſs it be in a *Reſonitus*. The bones of children are more ſoft, thin, and repleniſhed with a ſanguine humidity, than thoſe of old men, and therefore more ſubject to putrefaction; Wherefore the wounds which happen to the bones of children, though of themſelves, and their own nature they may be more eaſily healed, (becauſe they are more ſoft, whereby it comes to paſs, that they may be more eaſily agglutinated, neither is there fit matter wanting for their agglutination by reaſon of the plenty of blood laudable both in conſiſtence and quality) than in old men, whoſe bones are dryer and harder, and ſo reſiſt union, which comes by mixture, and their blood is ſerous, and conſequently a more unfit bond of unity and agglutination; yet oft-times through occaſion of the ſymptomes which follow upon them, that is, putrefaction and corruption, which ſooner ariſe in a hot and moiſt body, and are more ſpeedily encreaſed in a ſoft and tender, they uſually are more ſuſpected and difficult to heal.

The Patient lives longer of a deadly fracture in the skull, in Winter than in Summer, for that the native heat is more vigorous in that time than in this; beſides, alſo the humors putrefie ſooner in Summer, becauſe unnaturall heat is then eaſily inflamed and more predominant, as many have obſerved out of *Hippocrates*.

*Aph. 15. ſect. 1.* The wounds of the brain and of the *Meninges* or membranes thereof are moſt commonly deadly, becauſe the action of the muſcles of the cheſt, and others ſerving for reſpiration, is divers times diſturbed and intercepted, whence death inſues. If a ſwelling happening upon a wound of the head preſently vaniſh away, it is an ill ſign, unleſs there be ſome good reaſon therefore, as blood-letting, purging, or the uſe of reſolving locall medicines, as may be gathered by *Hippocrates* in his Aphoriſms. If a feaver inſue preſently after the beginning of a wound of the head, that is, upon the fourth or ſeventh day, which uſually happens, you muſt judg it to be occaſioned by the generating of *Pus* or Matter, as it is recited by *Hippocrates*. Neither is ſuch a feaver ſo much to be feared, as that which happens after the ſeventh day, in which time it ought to be terminated; but if it happen upon the tenth or fourteenth day with cold or ſhaking, it is dangerous, becauſe it makes us conjecture that there is putrefaction in the brain, the *Menings*, or skul, through which occaſion it may ariſe, chiefly if other ſigns ſhall alſo concur, which may ſhew any putrefaction, as if the wound ſhall be pallid and of a faint yellowiſh colour, as fleſh looks after it is waſhed.

*Aphor. 65. ſect. 5.*

*Aph. 47. ſect 2.*

Wounds which are dry, rough, livid and black are evill.

For, as it is in *Hippocrates Aphoriſ. 2. ſect. 7.* It is an ill ſign if the fleſh look livid, when the bone is affected; for that colour portends the extinction of the heat, through which occaſion, the lively, or indifferently red colour of the part, faints and dyes, and the fleſh thereabout is diſſolved into a viſcid *Pus* or filth.

Commonly another worſe affect follows hereon, wherein the wound becoming withered and dry, looks like ſalted fleſh, ſends forth no matter, is livid and black, whence you may conjecture, that the bone is corrupted, eſpecially if it become rough, whereas it was formerly ſmooth and plain; for it is made rough when *Caries* or corruption invades it; but as the *Caries* increaſes, it becomes livid and black, ſanious matter with all ſweating out of the *Diploe*, as I have obſerved in many: all which are ſigns that the native heat is decayed, and therefore death at hand; but if ſuch a feaver be occaſioned from an *Eryſipelas* which is either preſent or at hand, it is uſually leſs terrible. But you ſhall know by theſe ſigns, that the feaver is cauſed by an *Eryſipelas* and conflux of cholerick matter; if it keep the form of a Ter-

The ſigns of a a feaver cauſed by an *Eryſipelas*.

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tian, if the fit take them with coldneſs and end in a ſweat; if it be not terminated before the cholerick matter is either converted into *Pus* or elſe reſolved; if the lips of the wound be ſomewhat ſowln, as alſo all the face; if the eyes be red and fiery; if the neck and chaps be ſo ſtiffe, that he can ſcarſe bend the one, or open the other; if there be great exceſs of biting and pricking pain, and heat, and that far greater than in a *Phlegmon*. For ſuch an *Eryſipelous* diſpoſition generated of thin and hot blood, chiefly aſſails the face, and that for two cauſes.

The firſt is, by reaſon of the naturall levity of the cholerick humor; the other becauſe of the rarity of the skin of theſe parts.

Why an *Eryſipelas* chiefly aſſails the face.

The cure of ſuch an affect muſt be performed by two means, that is, evacuation, and cooling with humectation. If choler alone, cauſe this tumor, we muſt eaſily be induced to let blood, but we muſt purge him with medicines evacuating choler. If it be an *Eryſipelas phlegmonodes*, you muſt draw blood from the Cephalick vein of that ſide, which is moſt affected, alwayes uſing adviſe of a Phyſitian. Having uſed theſe generall means, you muſt apply refrigerating and humecting things, ſuch as are the juyce of Night-ſhade, Houſleek, Purſlane, Lettuce, Navell wort, Water Lentill, or Ducks-meat, Gourds; a liniment made of two handfuls of Sorrell boyled in fair water, then beaten or drawn through a ſcarſe, with oyntment of Roſes, or ſome *unguent. Populeon* added thereto, will be very commodious. Such and the like remedies muſt be often and ſo long renewed untill the unnaturall heat be extinguiſhed. But we muſt be carefull to abſtain from all unctuous and oyly things, becauſe they may eaſily be inflamed, and ſo increaſe the diſeaſe. Next we muſt come to reſolving medicines; but it is good when any thing comes from within, to without; but on the contrary it is ill, when it returns from without inwards, as experience and the Authority of *Hippocrates* teſtifie: If when the bone ſhall become purulent, puſtules ſhall break out on the tongue, by the dropping down of the acrid filth or matter by the holes of the palat upon the tongue, which lyes under. Now when this ſymptom appears, few eſcape. Alſo it is deadly when one becomes dumb and ſtupid, that is, Apoplectick by a ſtroak or wound on the head; for it is a ſign that not only the bone, but alſo the brain it ſelf is hurt. But oft-times the hurt of the Brain proceeds ſo far, that from corruption it turns to a Sphacell, in which caſe, they all have not only puſtules on their tongues, but ſome of them dye ſtupid and mute, otherſome with a convulſion of the oppoſite part; neither as yet have I obſerved any which have dyed with either of theſe ſymptomes, by reaſon of a wound in the head, who have not had the ſubſtance of their brain tainted with a Sphacell, as it hath appeared when their skulls have been opened after their death.

Why oyly things muſt not be uſed in an *Eryſipelas* of the face. *Aph. 25. ſect. 6.*

Deadly ſigns in wounds of the head.

## CHAP. XI.

*Why, when the brain is hurt by a wound of the head, there may follow a Convulſion of the oppoſite part.*

MAny have to this day enquired, but as yet as far as I know it hath not been ſufficiently explained, why a convulſion in wounds of the head ſeizes on the part oppoſite to the blow. Therefore I have thought good to end that controverſie in this place. My reaſon is this, that kind of Symptom happens in the ſound part by reaſon of emptineſs and dryneſs; but there is a twofold cauſe, and that wholly in the wounded part, of this emptineſs and dryneſs of the ſound or oppoſite part; to wit, pain and the concourſe of the ſpirits and humors thither by the occaſion of the wound, and by reaſon of the pains drawing and natures violently ſending help to the afflicted part.

A convulſion is cauſed by dryneſs.

A twofold cauſe of convulſifick dryneſs.

The ſound part exhauſted by this means both of the ſpirits and humors, eaſily falls into a Convulſion.

For thus *Galen* writes; God the Creator of nature, hath ſo knit together, the triple ſpirituous ſubſtance of our bodies, with that tye, and league of concord, by the productions of the paſſages; to wit of Nerves, Veins, and Arteries, that if one of theſe forſake any part, the reſt preſently neglect it, whereby it languiſheth; and by little and little dyes, through defect of nouriſhment. But if any object that nature hath made the body double, for this purpoſe, that when one part is hurt, the other remaining ſafe and ſound, might ſuffice for life and neceſſity: but I ſay, this axiom hath no truth in the veſſels and paſſages of the body. For it hath not every where doubled the veſſels, for there is but one only vein, appointed for the nouriſhment of the brain, and the membranes thereof, which is that they call the *Torcular*, by which when the left part is wounded, it may exhauſt the nouriſhment of the right and ſound part, and though that occaſion cauſe it to have a convulſion, by too much dryneſs; Verily it is true, that when in the oppoſite parts, the muſcles of one kind are equall in magnitude, ſtrength, and number, the reſolution of one part, makes the convulſion of the other by accident; but it is not ſo in the brain.

*Lib. 4. de uſu partium.*

For the two parts of the brain, the right and left, each by its ſelf performs that which belongs thereto, without the conſent, conſpiration or commerce of the oppoſite part; for otherwiſe it ſhould follow, that the Palſie properly ſo called, that is of half the body, which happens by reſolution, cauſed either by mollification or obſtruction reſiding in either part of the brain, ſhould infer together with it a Convulſion of the oppoſite part. Which notwithſtanding dayly experience convinces as falſe. Wherefore we muſt certainly

think,

think, that in wounds of the head wherein the brain is hurt, that inanition and want of nourishment are the causes, that the sound and opposite part suffers a convulsion.

Opinion of *Dalechampius*

*Francis Dalechampius* in his French Chirurgery renders another reason of this question; That, (saith he) the truth of this proposition may stand firm and ratified, we must suppose, that the convulsion of the opposite part mentioned by *Hippocrates*, doth then only happen, when by reason of the greatness of the inflammation in the hurt part of the brain, which hath already inferred corruption, and a Gangrene to the brain and membranes thereof, and within a short time is ready to cause a sphacell in the skull, so that the disease must be terminated by death; for in this defined state of the disease, and these conditions, the sense and motion must necessarily perish in the affected part, as we see it happens in other Gangrens, through the extinction of the native heat. Besides, the passages of the animall spirit must necessarily be so obstructed by the greatness of such an inflammation or phlegmon, that it cannot flow from thence to the parts of the same side lying there under, and to the neighbouring parts of the brain; and if it should flow thither, it will be unprofitable to carry the strength and faculty of sense and motion, as that which is infected and changed by admixture of putrid and Gangrenous vapours. Whereby it cometh to pass, that the wounded part destitute of sense, is not stirred up to expell that which would be troublesome to it, if it had sense; wherefore neither are the Nerves thence arising seised upon, or contracted by a Convulsion.

It furthermore comes to pass, that because these same nerves are deprived of the presence and comfort of the animall spirit, and in like manner the parts of the same side, drawing from thence their sense and motion are possessed with a palsie; for a palsie is caused either by the cutting or obstruction of a Nerve, or the madefaction, or mollification thereof by a thin and watry humor, or so affected by some vehement distemper, that it cannot receive the Animall spirit.

But for the opposite part and the convulsion thereof, it is known and granted by all, that a convulsion is caused either by repletion which shortens the Nerves by distending them into bredth, or by inanition, when as the native and primitive heat of the Nerves being wasted, their proper substance becoming dry is wrinckled up and contracted; or else it proceeds from the vellication, and acrimonie of some vapour, or sanious and biting humor, or from vehemency of pain. So we have known the falling sickness caused by a venenate exhalation carried from the foot to the brain. Also we know that a convulsion, is caused in the puncture of the Nerves, when as any acrid and sanious humor is shut up therein, the orifice thereof being closed; but in wounds of the Nerves when any Nerve is half cut, there happens a convulsion by the bitterness of the pain.

But verily in the opposite part, there are manifestly two of these causes of a convulsion; that is to say, a putrid and carion like vapour, exhaling from the hurt, and Gangrenate part of the brain; and also a virulent, acrid and biting *Sanies*, or filth, sweating into the opposite sound part, from the affected and Gangrenous; the malignity of which *Sanies*, *Hippocrates* desirous to decipher, in reckoning up the deadly signs of a wounded head, hath expressed it by the word *Ichor*; and in his book of fractures he hath called this humor *Dacryodes et non Pyon.* [that is, *weeping and not digested.*] Therefore it is no marvail if the opposite and sound part endued with exquisite and perfect sense, and offended by the flowing thereto of both the vaporous and sanious matter, using its owne force, contend and labour as much as it can, for the expulsion of that which is troublesome thereto. This labouring or concussion is followed (as we see in the falling sickness) by a convulsion, as that which is undertaken in vain, death being now at hand; and nature over-ruled by the disease. Thus (saith *Dalechampius*) must we in my judgement determine of that proposition of *Hippocrates* and *Avicen.*

But he addes further, in wounds of the head, which are not deadly, practitioners observe that sometimes the hurt part is taken with the palsie, and the sound with a convulsion; otherwhiles on the contrary, the wounded part is seised by a Convulsion and the sound by a Palsie; otherwhiles both of them by a convulsion or Palsie, and somewhiles the one of them by a convulsion or Palsie, the other being free from both affects; the causes of all which belong not to this place to explain. Thus much *Dalechampius.*

## CHAP. XII.

*A Conclusion of the deadly signs in the Wounds of the head.*

The signes of a deadly wound from the depraved faculties of the minde.

NOw that we may returne to our former discourse; you may certainly foretell the patient will dye; when his reason and judgement being perverted, he shall talke idly; when his memory fails him; when he cannot governe his tongue; when his sight growes dark and dim, his ears deaf, when he would cast himself headlong from his bed, or else lyes therein without any motion; when he hath a continuall feaver with a *delirium*; when the tongue breaks out in pustles, when it is chopt, and become black, by reason of too much dryness; when the wound grows dry, and casts forth little or no matter; when as the colour of the wound which was formerly fresh, it now become like

From habite of the body.

salted

ſalted fleſh yellow and pale; when the Urine, and other excrements ſuppreſt; when the palſie, convulſion, apoplexie; and laſtly, often ſowning, with a ſmall and unequall pulſe, invade him. All ſuch ſigns ſometimes appear preſently after the wound, otherwhiles ſome few dayes after; therefore when as the brain is hurt and wounded by the violence of the inciſion, or fiſſure, of the contuſion, compreſſion, puncture, concuſſion, or any other fracture, the forementioned ſigns appear preſently in the firſt dayes; but when they do not appear til many dayes after the blow, you may know that they riſe and appear, by reaſon of an inflammation and phlegmon in the brain, occaſioned by the putrefaction of the bloud poured forth upon it. From the time that ſuch ſigns appear.

But we muſt obſerve this by the way, which alſo belongs to the prognoſticks, that fleſh is eaſily regenerated, and reſtored in all parts of the head, except in that part of the forehead, which is a little above that which lies between the eye-brows, ſo that it will be ulcerated ever after, and muſt be covered with a Plaiſter. I beleeve that in that place there is an internall cavity in the bone, full of air, which goes to the five-like bones of the noſe, by which the growth of fleſh may be hindered; or elſe that the bone is very denſe or compact in that place, ſo that there can ſcarſe ſufficient juice ſweat forth, which may ſuffice for the regeneration of fleſh; add hereunto a great conflux of excrements flowing to this ulcer, which ſhould otherwiſe be evacuated by the eyes and noſe, which hinder by that means the dryneſs of the ulcer, and conſequently the healing thereof. *Celſus lib. 8. cap. 4.*

Hence certainly it comes to paſs, that if you deſire the Patient thus affected to breath, ſhutting his mouth and noſe, the air or breath will come forth of the ulcer with ſuch force, as it will eaſily blow forth a lighted candle of an indifferent bigneſs held thereto. Which thing I proteſt, I obſerved in a certain man, whom I was forced to trepan in that place, by reaſon the bone of the forehead was broken and depreſſed.

## CHAP. XIII.

*Of ſalutary ſigns in wounds of the head.*

BUt on the contrary theſe are ſalutary ſigns, when the Patient hath no feaver, is in his right mind, is well at the application or taking of any thing, ſleeps well, hath his belly ſoluble, the wound looks with a freſh and lively colour, caſts forth digeſted and laudable matter, the *Craſſa Meninx* hath its motion free and no way hindred.

Yet we muſt note, which alſo is obſerved by the Ancients and confirmed by experience, that we muſt think none paſt danger, and free from all chance, untill the hundreth day be paſt. Wherefore the Phyſitian ought ſo long to have a care of his Patient, that is, to conſider how he behaves and governs himſelf in meat, drink, ſleep, venery and other things. When the Patients are out of danger.

But let the Patient diligently avoid and ſhun cold, for many when they have been cured of wounds of the head, by careleſs taking cold have been brought into danger of their lives. Alſo you muſt know that the *Callus* whereby the bones of the skull are knit together, requires almoſt the ſpace of forty or fifty dayes to its perfect coagmentation and concretion. Though in very deed one cannot ſet down a certain number of dayes, by reaſon of the variety of bodies, or tempers: For it is ſooner finiſhed in young men, and more ſlowly in old; And thus much may ſerve for prognoſticks. Now will we treat as briefly and perſpicuouſly as we can of the cure both in generall and particular; wherefore beginning with the generall we will firſt preſcribe a convenient diet by the moderate uſe of the ſix things not naturall. The Patient muſt beware of cold.

## CHAP. XIIII.

*Of the generall cure of a broken skull, and of the Symptomes uſually happening thereupon.*

THe firſt cure muſt be, to keep the Patient in a temperate air; and if ſo be, that it be not ſuch of it ſelf and its own proper nature, it muſt be corrected by Art. As in winter he muſt have a clear fire made in his chamber, leſt the ſmoak cauſe ſneeſing and other accidents; and the windows and doors muſt be kept ſhut to hinder the approach of the cold air and wind. All the time the wound is kept open to be dreſt, ſome body ſtanding by ſhall hold a chafendiſh ful of coals or a heated Iron bar over the wound, at ſuch a diſtance, that a moderate heat may paſs thence to the wound; and the frigidity of the encompaſſing air may be corrected by the breathing of the diffuſed heat. For cold according to the opinion of *Hippocrates*, is an enemy to the Brain, Bones, Nerves, and ſpinall marrow; it is alſo hurtfull to ulcers, by ſuppreſſing their excrements, which ſuppreſt do not only hinder ſuppuration, but alſo by corroſion makes them ſinuous. Therefore *Galen* rightly admoniſheth us, to keep cold from the brain, not only in the time of trepaning, but alſo afterwards. For there can be no greater, nor more certain harm befall the fractured skull than by admitting the air, by ſuch as are unskilfull. For if the air ſhould be hotter than the brain, then it could not thence be refrigerated; but if the brain ſhould be laid open to the air, in the midſt of ſummer, when it is at the hotteſt, yet would it be refrigerated; and unleſs it were relieved with hot things, take harm: this is the opinion of *Galen*, whereby you may underſtand that many who have their skulls broken, dye more through default of skill in the curing, than by the greatneſs of the fracture. How the air ought to be. *Aphor. 18. ſect. 5.* *Lib. 2. de uſu part. cap. 2.* The Air though in ſummer is colder than the brain.

But (when the wound is bound up with the pledgets, cloths, and rowlers, as is fit) if the air chance to be more hot, than the Patient can well indure, let it be amended by ſprinkling, and ſtrawing the chamber with cold water, oxycrate, the branches of Willows and Vine. Neither is it ſufficient to ſhun the too cold air, unleſs alſo you take heed of the over light, chiefly untill ſuch time as the moſt feared and malign ſymptomes are paſt.

For a too great light diſſipates the ſpirits, increaſes pain, ſtrengthens the feaver and ſymptomes. *Hippocrates* wholly forbids wine, therefore the Patient inſtead thereof muſt drink Barly water, fair water boyled and tempered with Julep of Roſes, ſyrup of Violets, vinegar and the like: water where- The diſcommodities of too much light.

What his drink muſt be.

in bread crums have been ſteeped, water and ſugar with a little juyce of Lemons, or pomecitron added thereto, and ſuch like as the ability and taſte of the Patient ſhall require. Let him continue ſuch drinks untill he be free from malign ſymptoms, which uſually happen within fourteen dayes.

Almonds increaſe the pain of the head.

His meat ſhall be pap, ptiſan, ſhunning Almond milks; (for Almonds are ſaid to fil the head with vapours and cauſe pain) ſtued damask Prunes, Raiſons and currants, ſeaſoned with ſugar, and a little cinnamon (which hath a wonderfull power to comfort the ſtomach, and revive and exhilarate the ſpirits) Chickens, Pidgeons, Veal, Kid, Leverets, birds of the fields, Pheaſons, black-birds, Turtles, Partridges, Thruſhes, Larks and ſuch like meats of good digeſtion, boiled with lettuce, purſlain, ſorrell, borage, bugloſs, ſuccory, endive and the like, are thought very convenient in this caſe. If he deſire at any time to feed on theſe meats roſted, he may only dipping them in verjuice, in the acid juices of Oranges, Citrons, Lemons, or Pomegranats, ſometimes in one, and ſometimes in another, according to his taſt and ability.

What fiſh he may eat.

If any have a deſire to eat fiſh, he muſt mak choyce of Trouts, Gudgeons, Pikes and the like, which live in running and clear waters, and not in muddy; he ſhall eſchew all cold ſallets and pulſe, becauſe they fly up and trouble the head: it will be convenient after meat to uſe common dridg powder, or Aniſeed, Fennell ſeed or Coriander comfits, alſo conſerve of Roſes, or Marmilate of Quinces to ſhut up the orifice of the Ventricle, leſt the head ſhould be offended with vapours ariſing from thence.

*Aphor.* 13. & 14. *ſect.* 1.

Children muſt eat often, but ſparingly; for children cannot faſt ſo long as thoſe which are elder, becauſe their naturall heat is more ſtrong, wherefore they ſtand in need of more nouriſhment; ſo alſo in winter all ſorts of people require more plentifull nouriſhment, for that then their ſtomachs are more hot than in Summer.

*Aphor.* 15. *ſect.* 2.

When the foureteenth day is paſt, if neither a feaver, nor any thing elſe forbid, he may drink wine moderately, & by little and little, encreaſe his diet, but that reſpectively to each ones nature, ſtrength and cuſtome. He ſhall ſhun, as much as in him lyes, ſleep on the day time, unleſs it happen that a *Phlegmon* ſeiſe upon the brain or *Meninges*. For in this caſe it will be expedient to ſleep on the day time, eſpecially from morning till noon, for in this ſeaſon of the day, as alſo in the ſpring blood is predominant in the body, according to the opinion of *Hippocrates*. For it is ſo vulgarly known, that it need not be ſpoken, that the blood when we are awake is carried into the habit and ſurface of the body; but on the contrary by ſleep it is called into the noble parts, the Heart and Liver. Wherefore if that the blood by the force of the Sun caſting his beams upon the earth at his riſing is carryed into the habit of the body, ſhould again be more and more diffuſed by the ſtrength & motion of watching, the inflammation in the brain and *Meninges* would be much encreaſed. Wherefore it will be better, eſpecially then to ſtay by ſleep the violence of the blood running into the habit of the body, when it ſhall ſeem to rage and more violently to affect that way. Watching muſt in like manner be moderate; for too much depraves the temper of the brain and of the habit of the whole body; it cauſes crudities, pains and heavineſs of the head, and makes the wounds dry and maligne.

Why ſleep upon the day time is good for the brain being inflamed.

*Lib.* 2. *Epidem.*

The diſcommodities inſuing immoderate Watching.

But if the Patient cannot ſleep by reaſon of the vehemency of the inflammation of the brain and *Meninges*, *Galen* wiſhes, to waſh, beſmear and anoint the head, noſe, temples and ears with refrigerating and humecting things, for theſe ſtupefie, and make drowſie the Brain and membranes thereof, being more hot than they ought to be. Wherefore for this purpoſe let the temples be anointed with *Vnguentum populeon*, or *Vnguentum Roſatum* with a little roſe vinegar, or oxycrate; let a ſponge moiſtened in the decoction of white or black poppie ſeed, of the rinds of the roots of Mandrages, of the ſeeds of Henbane, lettuce, purſlane, plantain, night-ſhade and the like. He may alſo have a broath or barly cream, into which you may put an emulſion made of the ſeeds of white Poppy, or let him have a potion made with ℥ i, or ℥ i ß, of the ſyrup of poppy, with ℥ ij, of Lettuce water; Let the Patient uſe theſe things 4. houres after meat, to procure ſleep. For ſleep doth much help concoction, it repairs the efflux of the triple ſubſtance cauſed by watching aſſwageth pain, refreſheth the weary, mitigates anger and ſorrow, reſtores the depraved reaſon, ſo that for theſe reſpects it is abſolutely neceſſary that the Patient take his naturall reſt.

*Gal. Meth.* 18.

Medicines procuring ſleep.

The commodities of ſleep.

If the Patient ſhall be plethorick, let the plenitude be leſſened by blood-letting, purging and a ſlender diet, according to the diſertion of the Phyſitian who ſhall overſee the cure. But we muſt take heed of ſtrong purgations, in theſe kinds of wounds, eſpecially at the beginning, leſt the feaver, inflammation, pain, and other ſuch like ſymptoms be increaſed by ſtirring up the humors.

*Lib.* 4. *meth.*

Phlebotomy, according to *Galens* opinion, muſt not only be made reſpectively to the plenty of blood, but alſo agreeable to the greatneſs of the preſent diſeaſe, or that which is to come, to divert, and draw back that humor which flows down, by a way contrary to that which is impact in the part; and which muſt be there evacuated, or drawn to the next. Wherefore for example, if the right ſide of the head be wounded, the Cephalick vein of the right arm ſhall be opened, unleſs a great *Plethora* or plenitude cauſe us to open the *Baſilica*, or Median, yet if neither of them can be fitly opened, the *Baſilica* may be opened, although the body is not plethorick. The like courſe muſt be obſerved in wounds of the left ſide of the head; for that is far better by reaſon of the ſtraitneſs of the fibers, than to draw blood on the oppoſite ſide; in performance whereof you muſt have diligent care of the ſtrength of the Patient, ſtill feeling his pulſe, unleſs a Phyſitian be preſent, to whoſe judgment you muſt then commit all that buſineſs. For the pulſe is, in *Galens* opinion, the certaineſt ſhewer of the ſtrength. Wherefore we muſt conſider the changes and inequalities thereof, for as ſoon as we find it to become leſſer and more ſlow, when the forehead begins to ſweat a little, when he feels a pain at his heart, when he is taken with a deſire to vomit, or go to ſtool, or with yawning, and when he ſhall change his colour and his lips look pale, then you muſt ſtop the blood as ſpeedily as you can; otherwiſe there will be danger leſt he poure forth his life together with his blood. Then he muſt be refreſhed with bread ſteeped in wine, and put into his mouth, and by rubbing his temples and noſtrils

*Lib. de cur. per ſanguinis miſſ.*

with

with ſtrong vinegar, and by lying upon his back. But the part ſhall be eaſed and freed from ſome portion of the impact and conjunct humor by gently ſcarifying the lips of the wound, or applying of Leeches. But it ſhall be diverted, by opening theſe veins which are nigheſt to the wounded part, as the *Vena puppis*, or that in the midſt of the forehead, or of the temples, or theſe which are under the tongue; beſides alſo cupping-glaſſes ſhall alſo be applyed to the ſhoulder ſometimes, with ſcarification, ſometimes without; neither muſt ſtrong, and long frictions, with courſe clothes, of all the whole body, the head excepted, be omitted during the whole time of the cure, for theſe will be available, though but for this; that is, to draw back and diſſipate by inſenſible tranſpiration the vapours which otherwiſe would aſcend into the head, which matters certainly in a body that lyes ſtill and wants both the uſe and benefit of accuſtomed exerciſe, are much increaſed. The uſe of Fractures.

But it ſhall be made manifeſt by this following and notable example, how powerfull blood-letting is, to leſſen and mitigate the inflammation of the Brain, or the membranes thereof in wounds of the head. I was lately called into the ſuburbs of Saint *German*, there to viſit a young man twenty eight yeeres old, who lodged there in the houſe of *Iohn Martiall*, at the ſign of Saint *Michaell*. This young man, was one of the houſhold ſervants of Maſter *Doucador*, the ſteward of the Lady *Admirall* of *Brion*. He fell down headlong upon the left *Bregma*, upon a marble pavement, whence he received a contuſed wound, without any fracture of the skull, and being he was of a ſanguin temperature, by occaſion of this wound, a feaver tooke him on the ſeaventh day with a continuall *delirium* and inflamation of phlegmonous tumor of the wounded *Pericranium*. This ſame tumor poſſeſſing his whole head and neck by continuation and ſympathy of the parts, was grown to ſuch a bigneſs, that his viſage was ſo much altered, that his friends knew him not; neither could he ſpeak, heare, or ſwallow any thing but what was very liquid. Which I obſerving, although I knew, that the day paſt, which was the eight day of his diſeaſe, he had foure ſaucers of blood taken from him by *Germaine Agate* Barber-ſurgeon of the ſame ſuburbs; yet conſidering the integrity and conſtancy of the ſtrength of the Patient, I thought good to bleed him again; wherefore I drew from him fourteen ſaucers at that one time; when I came to him the day after, & ſaw that neither the feaver, nor any of the fore mentioned ſymptomes were any whit remitted, or aſſwaged, I forthwith took from him foure ſaucers more, which in all made two and twenty; the day following when I had obſerved, that the ſymptomes were no whit leſſened, I durſt not preſume by my own only advice, to let him the fourth time blood as I deſired. Wherefore I brought unto him, that moſt famous Phyſitian Doctor *Violene*, who as ſoon as he felt his pulſe, knowing by the vehemency thereof, the ſtrength of the Patient, and moreover conſidering the greatneſs of the inflammation & tumor which offered it ſelf to his ſight, he bid me preſently take out my Lancet and open a vein. But I lingred on ſet purpoſe, and told him, that he had already twenty two ſaucers of blood taken from him. Then ſaid he, Grant it be ſo, and though more have been drawn, yet muſt we not therefore deſiſt from our enterpriſe, eſpecially ſeeing the two chiefe Indications of blood-letting yet remain, that is, the greatneſs of the diſeaſe, and the conſtant ſtrength of the Patient. I being glad of this, tooke three ſaucers more of blood, he ſtanding by, and was ready to take more but that he wiſhed me to defer it untill the after noon; wherefore returning after dinner I filled two ſaucers more, ſo that in all, this young man to his great benefit, loſt twenty ſeaven ſaucers of blood at five times, within the ſpace of foure dayes. Now the enſuing night was very pleaſing to him, the feaver left him about noon, the tumor grew much leſſe, the heat of the inflammation was aſſwaged in al parts, except in his eyelids, and the laps of his ears, which being ulcerated caſt forth a great quantity of *Pus* or matter. I have recited this hiſtory purpoſely, to take away the childiſh feare which many have to draw blood in the conſtant ſtrength of the Patient, and that it might appear how ſpeedy and certain a remedy it is in inflammations of the head and brain. A Hiſtory. The two chief Indications in blood-letting.

Now to return from whence we digreſſed, you muſt note that nothing is ſo hurtfull in fractures and wounds of the head, as venery; not only at that time the diſeaſe is preſent, but alſo long after the cure thereof. For great plenty of ſpirits are contained in a ſmall quantity of ſeed, and the greateſt part thereof flowes from the brain; hence therefore all the faculties, but chiefly the Animall, are reſolved, whence I have divers times obſerved death to enſue in ſmall wounds of the head, yea when they have been agglutinated and united. All paſſions of the mind muſt in like ſort be avoided, becauſe they by contraction and diſſipation of the ſpirits cauſe great trouble in the body and mind. Let a place be choſen for the Patient as far from noiſe as can be, as from the ringing of bells, beatings and knockings of Smiths, Coopers, and Carpenters, and from high-wayes through which they uſe to drive Coaches; for noiſe encreaſes pain, cauſes a feaver, and brings many other ſymptomes. The diſcommoditie of venery in wounds of the head. How hurtfull noyſe is to the fractures of the skull.

I remember when I was at *Hiſdin* at the time that it was beſieged by the forces of *Charles* the fifth, that when the wall was beaten with the Cannon, the noiſe of the Ordnance cauſed grievous torment to all thoſe which were ſick, but eſpecially thoſe that were wounded on their heads, ſo that they would ſay; that they thought at the diſcharging of every Cannon that they were cruelly ſtrucken with ſtaves on that part which was wounded, and verily their wounds were ſo angred herewith, that they bled much, and by their pain and feavers encreaſed, were forced with much ſighing to breath their laſt. Thus much may ſerve to be ſpoken of the cure in generall, now we will out of the monuments of the ancients, treat of the particular. A Hiſtory.

## CHAP. XV. *Of the particular cure of wounds of the head, and of the muſculous skin.*

LEt us begin with a ſimple wound, for whoſe cure the Chirurgeon muſt propoſe one only ſcope, to wit, Union; for unleſſe the wound pierce to the skull, it is cured like other wounds of the fleſhy parts of our bodies. But if it be compound, as many wayes as it is complicate, ſo many indications ſhew themſelves. In theſe the chiefeſt care muſt be had of the more urgent order and cauſe. Of a ſimple wound of the fleſh and the skin.

Therefore if the wound ſhall be ſimple and ſuperficiary, then the haire muſt firſt be ſhaven away, then a plaiſter applyed made of the white of an egge, bole Armenick and Aloes. The following day you muſt apply *Emplaſtrum de Ianua* or elſe *de gratia Dei*, untill the wound be perfectly healed. But if it be deeper and penetrate even to the *Pericranium*, the Chirurgeon ſhall not do amiſs, if at the ſecond dreſſing he apply a digeſtive medicine (as they call it) which may be made of Venice Turpentine, the yolks of egges, oyl of Roſes, and a little Saffron, and that ſhall be uſed ſo long, untill the wound come to maturation; for then you muſt add honey of Roſes and Barly floure to the digeſtive. Hence muſt we paſs to theſe medicines, into whoſe compoſition no oyly or unctuous bodie enters, ſuch as this; ℞ *Terebinth. venetæ*, ℥ ij, *ſyrupi roſar.* ℥ j, *pul. aloes, Myrrhæ, & maſtich. an.* ℥ ß. Let them all be incorporated and made into an unguent, which ſhall be perfectly regenerated, then it muſt be cicatrized with this following powder. ℞, *Aluminis combuſti, corticis granatorum combuſt. ana* ℥ j, *Miſceantur ſimul & fiat pulvis*: but if the wound be ſo large that it require a ſuture, it ſhall have ſo many ſtitches, with a needle, as need ſhall ſeem to require.

*A digeſtive medicine.*

*A ſarcotick medicine.*

*An Epulotick.*

*A Hiſtory.* Whilſt I was at *Hiſdin*, a certain ſouldier, by falling of the earth whilſt he undermined, had the Hairy ſcalp ſo preſſed down even to the *Pericranium*, and ſo wholly ſeparated from the beginning of the hind part of his head, even to his forehead, that it hung over his face. I went about the cure in this manner; I firſt waſht all the wound with wine, a little warmed, that ſo I might waſh away the congealed blood mixed with the earth; then I dryed it with a ſoft linnen cloth, and laid upon it Venice-Turpentine mixed with a little *Aqua-vitæ* wherein I had diſſolved ſome *Sanguis Draconis*, Maſtick and Aloes; then I reſtored the hanging skin to its former place, and there ſtaied it with ſome ſtitches, being neither too ſtrait, nor too cloſe together, for fear of pain and inflammation, (which two chiefly happen whilſt the wound comes to ſuppuration) but only as much as ſhould ſerve to ſtay it on every ſide, and to keep forth the air, which by its entrance doth much harm to wounds: the lower ſides of the wound, I filled with ſomewhat long and broad tents, that the matter might have paſſage forth. Then I applyed this following cataplaſm to all the head. ℞, *farinæ hord. & fabarum an.* ℥ vi. *olei roſati*, ℥iij, *aceti quantum ſufficit, fiat cataplaſma ad formam pultis*; this hath a faculty to dry, cool, repell, mitigate pain and inflammation and ſtay bleeding.

*What things we muſt obſerve in ſewing.*

*When we muſt not let blood in wounds.*

*A Hiſtory.* I did not let him blood, becauſe he had bled much, eſpecially at certain arteries which were broken neer his temples; he being dreſſed after this manner grew well in a ſhort time. But if the wound be made by the biting of a wild beaſt, it muſt be handled after another manner, as ſhall appear by this following hiſtory. As many people on a time ſtood looking upon the Kings Lyons, who were kept in the Tilt-yard at *Paris*, for the delight of King *Henry* the ſecond, and at his charges: it happened that one of the fierceſt of them broke the things wherein he was tyed, and leaping amongſt the company, he with his paws threw to the ground a Girl of ſome twelve yeers old, and taking her head in his mouth, with his teeth wounded the muſculous skin in many places, yet hurt not the skul. She ſcarſe at length delivered by the Maſter of the Lyons from the jaws of Death and the Lyon, was committed to the cure of *Rowland Claret* Chirurgeon; who was there preſent by chance at the ſame time; ſome few dayes after, I was called to viſit her; ſhe was in a feaver, her head, ſhoulders, breſt, and all the places where the Lyon had ſet his teeth, or nails, were ſwoln, all the edges of the wound were livid, and did flow with a wateriſh, acrid, virulent, cadaverous, dark green and ſtinking matter, ſo that I could ſcarſe indure the ſmell thereof; ſhe was alſo oppreſt with pricking, biting and very great pain; which I obſerving, that old ſaying came into my mind, which is: That all wounds made by the bitings of beaſts, or of men alſo, do ſomewhat participate of poyſon. Wherefore there muſt principally great care be had of the venenate impreſſion left in the wounds by the nails & teeth, and therefore ſuch things muſt be applyed, as have power to overcome poyſon. Wherefore I ſcarified the lips of the wounds in divers places, and applyed Leeches to ſuck out the venenate blood, and eaſe the inflammation of the parts, then I made a Lotion of *Ægyptiacum* Treacle and Mithridate after the following manner.

*The bitings of man and beaſts are venenate.*

*Theriacall topick Medicines.* ℞, *Mithrid.* ℥ j, *theriac.* ℥ ij, *ægyptiac.* ℥ ß, *diſſolvantur omnia cum aqua vitæ, & Cardui ben.* Let the wounds be fomented and waſhed with it warm; beſides alſo Treacle and Mithridate were put in all the medicines which were either applyed or put into the wound; and alſo of the ſame with the conſerves of Roſes and Bugloſs diſſolved in the water of Sorrell and *Carduus benedictus*, potions were made to ſtrengthen the heart and vindicate it from malign vapors.

*A Cordiall Epithema.* For which purpoſe alſo this following *Epithema* was applyed to the region of her heart. ℞, *aquæ roſar. & nenuphar, an.* ℥ iiij, *aceti ſcillitici* ℥ j, *corallorum, ſantalorum alborum & rubrorum, roſar. rub. pulveris, ſpodii. an.* ℥ j, *Mithridatii, theriacæ an.* ℥ ij, *flo. cordial. pulveriſatorum p. ij, croci* ℥ j, diſſolve them all together, make an Epitheme and apply it to the heart with a ſcarlet cloth or ſpunge, and let it be often renued. Verily ſhe dreſt after this manner, and the former remedies but once uſed, pain, inflammation and all the malign ſymptomes were much leſſened; to conclude, ſhee recovered, but lingred and was lean ſome two years after, yet at length ſhe was perfectly reſtored to her health and former nature. By which you may underſtand, that ſimple wounds muſt be handled after another manner, than theſe which have any touch of poiſon.

*The cure of the Hairy ſcalp when it is contuſed.* But now that we may proſecute the other affects of the hairy ſcalp; ſay that it is contuſed with a blow without a wound, that which muſt be firſt and alwayes done, (that ſo the affect may better appear, and the remedies which are applyed may take more effect) the hair muſt be ſhaven away, and at the firſt dreſſing a repelling medicine applyed, ſuch as this following *Oxyrh odinum*. ℞. *ol. roſ.* ℥ iij, *album ovorum nu.* ij, *pulveris nucum cypreſſi, balauſt. alumin. rochæ. roſar. rub. an.* ℥ j. Let them be all incorporated, and make a medicine for the former uſe, or in ſtead thereof you may apply the cataplaſm preſcribed before conſiſting of *Farina hordei, fabarum, aceto & oleo roſaceo*. But ſuch medicines muſt be often renued. When the pain and defluxion are appeaſed, we muſt uſe diſcuſſing medicines for diſſipation of

*A repelling medicine.*

that

that humor which remains impacted in the part; ℞ *Emplastri de mucilagin.* ℥ij. *oxicrocei, & emp. de melilo-to, an.* ℥j. *olei chamæm. & anethi, an.* ℥ß. *malaxentur simul et fiat emplastrum ad usum dictum.* Such a fomentation will also be good. ℞ *vini rub. lib.* iiij. *lixivii. com. lib.* ij. *nuces cupressi contus. nu.* x. *pul. myrtillorum* ℥j. *rosar. rub. absinth. fol. salviæ, majoranæ, stœchados, florum chamæm. melil. an. M.* ß. *aluminis rochæ, radicis cyperi, calami aromatici an.* ℥ß. *bulliant omnia simul,* and make a decoction to foment the grieved part. After somewhat a long fomenting it, whereby it may the better discusse, dry and exhaust the concrete humor, the head must be dryed and more discussing things applyed, such as the Cerate described by *Vigo* called *de minio*; which hath an emollient and digestive facultie in this form. ℞ *Olei chamæm. lilior. an.* ℥x. *olei mastich.* ℥ij. *pinguedinis vervecis lib.* j. *litharg. auri,* ℥viij. *minii* ℥ij. *vini boni cyathum unum, bulliant omnia simul baculo agitando, primum quidem lento igne, mox verò luculentiore, donec tota massa colorem nigrum vel subnigrum contrahat; adde in fine coctur. Terebinth. lib.* ß. *pulveris mastich.* ℥ij. *gum. elemi* ℥i. *cer. quantum sufficit, bulliant rursus una ebullitione & fiat empl. molle.* But if the humor be not thus discussed, but onely grow soft, then the tumor must be quickly opened, for when the flesh is inflamed and putrefied through occasion of the contained humor, the bone under it putrefies also by the contagion of the inflamation and the acrimony of the matter falling upon the bone. When you have opened it, wash away the filth of the ulcer with this following detersive medicine. ℞. *syrupi ros. & absinth. an.* ℥j. *terebinth.* ℥ ß. *pul. ireos, aloes, mastichis, myrrhæ, farinæ hordei an.* ℥ß. In stead hereof if there be great putrefaction, *Ægyptia* either by it selfe, or mixt with an equall quantity of *Vnguentum apostolorum* may be put into the ulcer. When the ulcer is clensed it will be time to use scarcotick and cicatrizing medicines.

A discussing Fomentation.

*Cerætum de Minio.*

Detersive or cleansing medicines.

## CHAP. XVI. *Of the particular cure of a fracture or broken skull.*

IF the skull be broken, so that it be needfull to trepan it, or to elevate and lift it up, or scrape it away, the musculous skin being cut as we formerly noted, the *Pericranium* shall be plucked from the skull, as we said before; which because it can hardly be done without great pain, by reason of its exquisite sense and connexion with the membranes of the braine, wee must labour to mitigate the paine for feare of inflammation and other accidents. Therefore the first dressing ended & the corners of the wound drawn each from other; at the second dressing put to the wound, a digestive (as they terme it) made of the yolk of an egge, and oyle of Roses, but you must apply no humid thing to the bone, because we desire to keep it sound and whole. For *Galens* opinion is, that bared bones must not be touched with unctuous things; but rather on the contrary all dry things must be applyed to them, which may consume the superfluous humidity. Therefore we must lay some lint and the cephalick powders which we shall hereafter describe, upon the bone we intend to preserve, and must have diligent care that it be not offended either by the ayre, or touch of humid medicines. You must in Trepaning have a speciall care of the *Crassa meninx*. For I have often observed a great quantity of blood to have flowed from some broken vessell, which adhered to the second Table: neither must we presently and forthwith stay such bleeding, but suffer it to flow according to the plenitude and strength of the patient; for thus the feaver, and together therewith the rest of the symptomes are diminished. For the opinion of *Hippocrates*, in every green wound it is good to cause often bleeding, except in the bellies; for thus the vehemency of pain, inflamation and other accidents will be lesse troublesome; also it is not amisse too for old ulcers to bleed much, for so they are freed from the burden of the impact humors. When you think it hath bled sufficiently, it may be stanched with this following medicine described by *Galen*.

Why the *Pericranium* hath such exquisite sense.

*Gal. 6. meth.* The bones are offended with the application of humid things.

*Lib. de ulcer.*

℞ *pulveris Aloes* ℥ij. *thuris mastiches, an.* ℥ß. *albumina ovorum nu.* ij. *agitentur simul cum pilis leporinis minutim incisis, fiat medicamentum.* When the bleeding is stayed, you shall for the asswaging of pain, drop upon the *Meninx* some Pigeons blood, yet warme by opening a Vein under the wing, then it shall be strewed over with this following powder, ℞ *Aloes, thuris, myrrhæ, sanguinis draconis an.* ℥j. *Misce, fiat pulvis subtilis.* Also you may make an irrigation with Rose Vinegar, or some repelling medicine; such as is a cataplasme *ex farinis, & oleo rosaceo.* Which may be applyed untill the fourth day to asswage and mitigate pain.

*Gal. 6. meth.*

*Vigoes Cerate* will be of good use in this case, as that which in my opinion is most fit for fractures of the skull, because it draws powerfully, resolves and dryes moderately, and by reason of the smell refreshes the animall spirits, and strengthens the brain and membranes thereof, as you may easily perceive by things which enter into the composition thereof. ℞ *Olei ros. Omph. resinæ pini, gummi Elemi, an.* ℥ij. *Mastiches* ℥iß. *pinguedinis vervecis castrati* ℥ijß. *foliorum beton. caprifol. anthos an. M.j. ammoniaci* ℥ß. *granorum tinctorum* ℥x. *liquata pinguedin eterenda terantur, & ammoniacum simul cum aceto scillitico, eliquetur; deinde bulliant omnia simul in lib.* ij. *vini boni, lento igne usque ad consumptionem vini, deinde exprimantur; cum expressione addantur terebinth. Ven.* ℥iiij. *cerâ albæ quantum sufficit, fiat cerotum molle ad usum prædictum.* Also let the neck, and all the spine of the back be anointed with a liniment, which hath force of mollifing the Nerves, lest they should suffer convulsion; such is this.

*Vigoes Cerate* good for a broken skull.

A liniment good against convulsions.

℞ *Rutæ, marrubii, roris mar. ebulor salviæ, berb. paralys. an. M.* ß. *rad. Ireos, cyperi, baccarum lauri, an.* ℥j. *florum chamæ. melil. hyperici, an. Mj. pistentur & macerentur omnia in vino albo per noctem, deinde coquantur in vase duplici cum oleo lumbricorum, liliorum, de terebinthina, axungiæ, anseris & hum. an.* ℥ij. *usque ad consumptionem vini, postea colentur & in colatura adde terebinth. venet.* ℥iij *aquæ vitæ* ℥ß. *ceræ quantum sufficit. fiat linimentum secundum artem.*

But when the pain is asswaged, we must abstain from all such unctuous things, lest they make the wound become sordid and malign, and putrefie the adjacent parts, and consequently the *Crassa meninx* and skull; for the integrity of all parts may be preserved by their like, and such are dry things in a fracture of the skull. Wherefore all humid and oyly things must be shunned in the cure thereof, unless peradventure there shal be some need to mitigate pain & bring the humor to suppuration.

For according to *Galen*, we are oft forc'd for a time to omit the proper cure of the disease, so to resist

*Gal. 4 meth.*

How farre humid things are good for a fractured skull.

reſiſt the ſymptomes; furthermore *Hippocrates* would have us not to foment the skull, no not with wine, but if we do, to let it be but with very little. *Vidius* interprets that little to be, when there is fear of inflamation; for wine if it be red, tart and aſtringent, hath a repreſſing, refrigerating and drying faculty: for otherwiſe all wine although it heats and dryes by its faculty, yet it actually humects and cools, both which are very hurtfull in wounds of the head, or a fractured skull, eſpecially when the bone is bare; for from too much cooling of the brain there is fear of a convulſion, or ſome other evill ſymptome. Wherefore let this be ratified, that is, We muſt not uſe humid and unctuous medicines in wounds of the head, except for curing of an inflamation, or the mitigation of pain cauſed thereby. Therefore let the bared skull be ſtrewed with catagmatick and cephalick powders, (being ſo called by the Ancients, for that they are convenient and good in fractures of the skull and the reſt of the bones) for by their dryneſs they conſume the ſuperfluous humidity, and by that means help nature in the ſeparating of the broken bones, and the regenerating of fleſh. Such powders uſually conſiſt of ſuch things as theſe enſuing. *Thus, radix Iridos florent. farina hordei, & Ervi, pulvis Aloes Hepaticæ, ſanguis Draconis, maſtiche, Myrrha, rad. Ariſtolochiæ, Gentianæ*: and generally all ſuch ſimples as have a drying and an abſtergent faculty without biting; but you muſt not uſe theſe things before the pain, inflamation and apoſtumation be paſt; that is then, when the membranes muſt be clenſed, the bones ſcaled, and the fleſh generated. For the skul by how much it is the dryer, by ſo much it requires and more eaſily endures more powerfull and dryer medicines than the *Dura Mater* or *Pericranium*, as that which in quickneſs of ſenſe comes far ſhort of theſe two. Wherefore when you would apply the forementioned cephalick powders to the *Meninges*, they muſt be aſſociated and mixed with hony, ſyrup of roſes or of wormwood and ſuch other like, that ſo their too violently drying faculty may be allayed and tempered.

Why Cephalick or Catagmatick powders are good.

When to be uſed. How to be mixed when they are to be applyed to the *Meninges*.

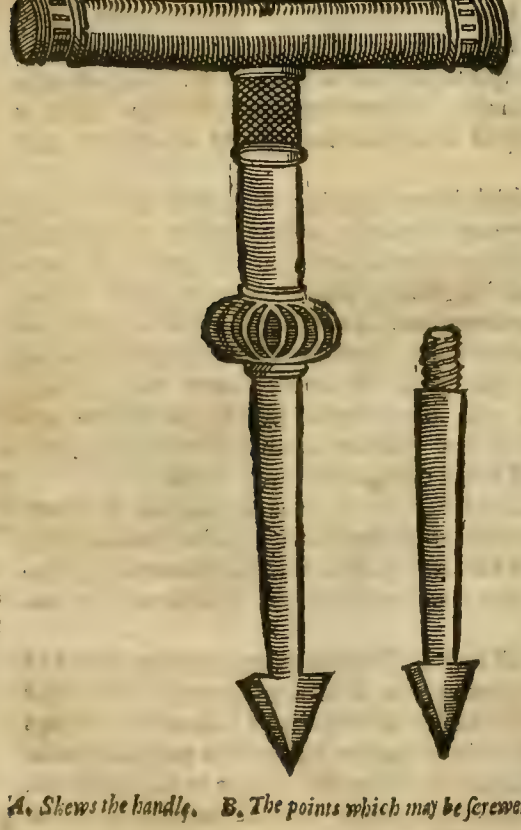
## CHAP. XVII. *Why we uſe Trepaning, in the Fractures of the Skull.*

THere are four cauſes of this remedy: The firſt is, to raiſe up the depreſt bones, and take forth their fragments, which preſs upon the *Meninges*, or alſo upon the ſubſtance of the brain. The ſecond is, that the *Sanies* or matter may be evacuated, clenſed, waſted, and dryed up, which by the breaking of any veſſell is poured forth upon the Membranes, whereby they are, and not they only, but the brain alſo is in great danger of corruption. The third is, for the fitter application of medicines, convenient for the wound and fracture. The fourth is, that ſo we may have ſomething whereby we may ſupply the defect of a Repelling Ligature, & ſuch an one as may hinder defluxions; for ſuch a Ligature cannot take place here as it may in the other parts of the body, by reaſon of the Sphæricall or Round figure of the head, which doth not eaſily admit binding; & then the denſity and hardneſs of the interpoſed skull is a means that the veſſels lying under it (by which uſually the defluxion comes) cannot eaſily be bound with a rowler ſufficiently to repell the running blood. And the externall veſſels, (to whom the force of the Ligature may come) cannot be bound without great pain, and danger of inflamation. For by ſuch a compreſſion the pulſation of the Arteries would be intercepted, and the efflux of the fuliginous excrements which uſeth to paſs through the ſutures of the skull, would be ſuppreſt, by reaſon of the conſtricton of theſe ſutures.

Why a repelling Ligature cannot be uſed in fractures of the skull.

The ſhape of this Inſtrument is not much different from a Gimblet, but that the point is three-ſquare, and not twined like a ſcrew; as you may perceive, by this following figure.

*A Gimblet or piercer to perforate the skull, before the ſetting to of the Trepan.*



Beſides alſo, the blood would thus be forced from the wounded part without, to within into the Membranes and Brain; when pain, inflammation, a Feaver, Abſceſs, Convulſion, Palſie, Apoplexie, and laſtly, death it ſelf would inſue.

And theſe are the chief cauſes, that Trepaning is neceſſary in fractures of the skull, and not ſo in the fractures of other bones.

How the patient muſt be placed when you Trepan him.

But before you apply or put to your Trepan, the Patient muſt be fitly placed or ſeated, and a double cloth muſt be many times wrapped about his head, and then his head muſt be ſo laid, or preſſed upon a Cuſhion or pillow, that when you come to your operation, it may not ſink down any further, but remain firm and ſtedy. Then you muſt ſtop the Patients ears with Cotten-wooll, that ſo he may not hear the noiſe made by the Trepan or any other Inſtrument.

What to be done before the application of the Trepan.

But before you put to your Trepan, the bone muſt be pierced with an Inſtrument, having a three ſquare point, that ſo it may be the more ſpeedily and certainly perforated. The point thereof muſt be no bigger then the pin of a Trepan, that ſo the Trepan which is forthwith to be applyed may ſtand the more firmer, and not play to and again in too wide a hole.

*A. Shews the handle. B. The points which may be ſcrewed and fitted into the handle.*

CHAP.

## CHAP. XVIII. *A Description of Trepans.*

THe Trepans are round saws, which cut the bone circularly more or less according to their greatness; they must have a pin standing in the middle a little further out than their teeth, so to stay and hold fast the Trepan that it stir neither to this side nor that, until it be entred and you have cut through the first table at the least: then you must take forth the pin, lest going quite through the bone, it may prick or hurt the *Crassa Meninx*. Wherefore when you have taken forth the pin, you may safely turn it about untill you have cut through both the tables; Your Trepans must also have a cap, or somewhat to ingirt or incompass them, lest no way hindred they cut more of the bone than we would, and in conclusion run into the *Meninx*. They must also be anointed with oyl, that so they may cut the more readily and gently; for thus Carpenters use to grease their saws. But you must, during the time of the operation, often dip them in cold water, lest the bone by attrition become too hot: for all hard solid bodies by quick and often turning about, become hot; but the bone made more hot and dry, is altered and changeth its nature, so that after it is cut, more of it scales and falls away. Now you must know that the bone, which is touched with the Trepan, or the Air, alwayes casts off scales, for the speedier helping forwards whereof, you must strew upon it powders made of Rocket, Briony, wild Coucumber & *Aristolochia* roots. When the bone is sufficiently scaled, let this following powder be put upon it, which hath a faculty to cover the bone with flesh, and and to harden it with dryness convenient to its kind. ℞ *Pulver. Irew Illyricæ, Aloes, Mannæ thuris, Myrrhæ, aristolochiæ an.* ʒ j. Flesh being by this means generated, let it be cicatrized by strewing upon it the rinds of Pomegranats and Alum burnt.

*The harm the bone receives by being heated with the Trepan.*

*What things hasten the scaling of the bone.*

Neither shall the Chirurgeon forcibly take away these scales, but commit that whole work to nature, which useth not to cast them off before that it hath generated flesh under them. For otherwise if he do any thing rashly, he brings new corruption to the bone; as we shall more at large declare, when we come to treat of *Caries* or rottenness of bones.

*The bone must not be forcibly scaled.*

He which useth the Trepan, must consider this, that the head is of a round figure, and also the Trepan cuts circularly, and therefore it is unpossible to cut the bone so equally on every side, as if it were performed upon a plain body. Furthermore the thickness of the skull is not alike in all places, wherefore you must look, and mark whether the Trepan go not more deep on one side than on the other, which you may do by measuring it now and then with a pin or needle, and if yee find that it is cut deeper on one side, than on the other, you must press down the Trepan more powerfully upon the opposite part.

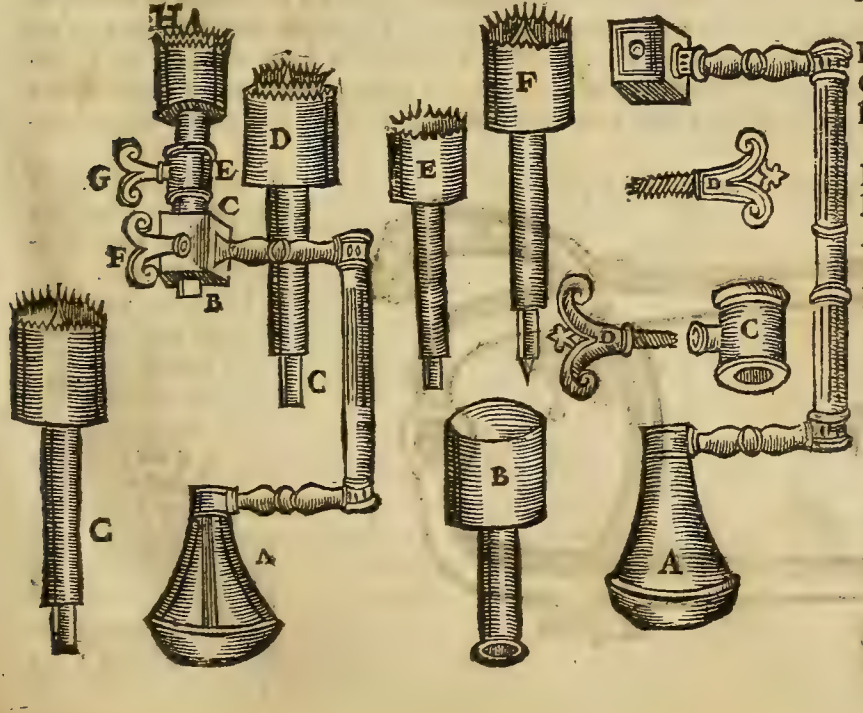
*A caution in Trepaning.*

But seeing there are many sorts of Trepans invented and expressed by many men, yet if you weigh and rightly consider them all, you shall find none more safe, than that I invented and have here delineated. For it cannot pierce one jot further into the skull, than he pleases that uses it, and therefore it cannot hurt either the *Meninges* or the Brain. An Iron head or cover stayes it as a bar, that it can penetrare no further than you shall think it requisite. This head or cover is to be drawn up and down, and set higher and lower, as he which uses it shall think good, and so it will stay the Trepan that it shall not goe a hairs bredth beyond your intended depth. So that henceforwards there shall be no Chirurgeon, howsoever ignorant in the performance of his Art, which by the benefit of such a Trepan may not perform this operation without any danger or fear of danger of touching the *Dura Mater*, the hurting whereof, puts the life in jeopardy.

*A safe and convenient Trepan.*

*The figure of our Trepan opened and taken in pieces.*

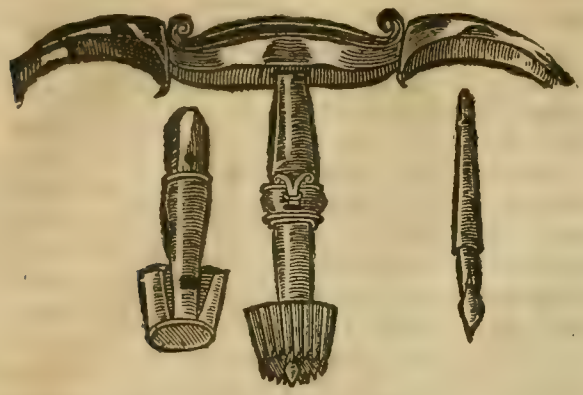
*The figure of the same Trepan fitted and put together.*

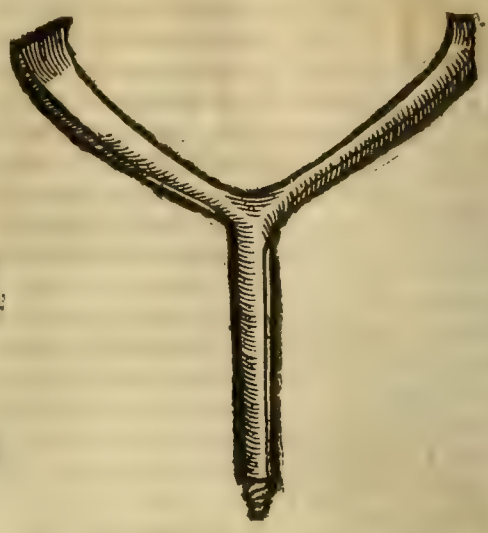



A. *Shews the whole handle or Brace of the Trepan.*
B. *The Cover or Cap of the Trepan.*
C. *The ferule.*
D.D. *The screw pins which hold and stay the ferule and Trepan.*
E. *The Trepan without his pin.*
F. *The Trepan furnished with its pin.*
A. *Shews the Brace and Trepan fitted in every point.*
B. *The place into which the Trepan is put and fitted.*
C.C.C. *The upper end of the trepan which is to be fitted and put into the Brain.*
D. *The Trepan with its cover or cap upon it.*
E. *The ferule.*
F. *A screw pin by the twining whereof the Trepan is fastened in the Brace.*
G. *Another screw pin which fastens the ferule closer to the Trepan.*
H. *The three square point.*

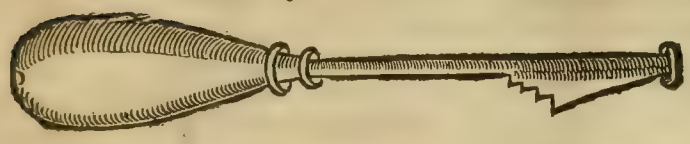
In ſtead of the other Trepan ſet forth by the Author, I have thought fit to give you the figure of that Trepan that is here moſt in uſe, and the fitteſt therefore, as it is ſet forth by Mr. Doctor *Crook*.

*A Terebellum or Gimblet conſiſting of three branches.*





*A Lentill-like cutting Scraper.*



All theſe particulars of the Trepan taken in ſunder, you may ſee united and fitted together in the other figure. But when you cannot bring out the bone which you have cut off with your Trepan, then you may take it forth with the *Terebellum* or Gimblet here expreſt, that is, ſcrewing the point thereof into the hole made by the threeſquare pin; the handle of this Inſtrument may alſo ſerve in ſtead of a Levatory. When with the Gimblet you have drawn or taken forth that part of the skull which was cut away by the Trepan; if there ſhall be any ſharp ſplinters in the ſecond table, which may hurt and prick the *Meninx*, when it is heaved up by the motion of the brain, they muſt be ſhaved away and planed with this Lentill faſhioned ſcraper, being ſo called, becauſe it hath the head thereof faſhioned and ſmooth like a Lentill, leſt being ſharpe it ſhould hurt and prick the membrane in the ſmoothing thereof.

The uſe of a Leaden Maller.

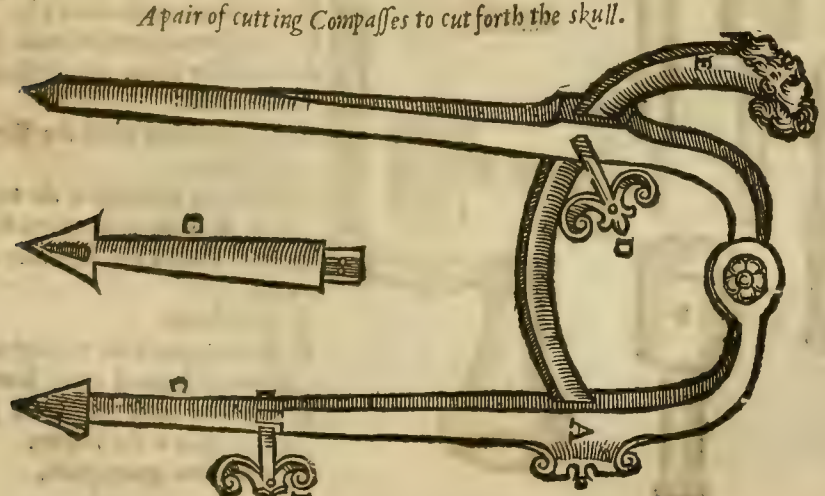
But if by reaſon of the thickneſs, the skull cannot be cut with this Lentill-like ſcraper, you may uſe the cutting ſcrapers and a Mallet. The mallet muſt be of lead, that ſo it may ſhake the brain as little as may be. But you muſt diligently with your mullets take forth the ſharp ſplinters, and peeces of the bone. But if the fractured part of the skul be ſuch, that it will not admit that ſection which is requiſite for the bared bone, as when the fracture is upon the temporall muſcle, or at the ſutures; then in the ſtead of one Trepan, two or three muſt be applyed, if the neceſſity of the preſent caſe ſo require, and that within a very ſmall compaſs; but they muſt not be applyed to the fractureed part, but nigh thereto, as we ſhall ſhew more at large in the following chapter. But the Trepans ſhall be applyed ſo neer to each other, that the ring of the ſecond may be joyned with the ring of the firſt and third. But if a fracture ſhall happen to light upon a ſuture, then you muſt not apply a Trepan to it, but uſe two thereto on each ſide; he that ſhall do otherwiſe, ſhall tear in ſunder the nervous and membranous fibers, and alſo the veins and arteries by which the *Dura Mater* is faſtened to the skull, and yeelds matter to the *Pericranium*. He which ſhall apply one Trepan, that is, but upon one ſide of the ſuture, he ſhall not be able to get forth all the *ſanies* which is fallen down on both ſides by reaſon of the partition of the *Craſſa Meninx*, which lies between, and riſes up by the ſuture of the skull.

VVhy a Trepan muſt not be applyed to the ſutures.

VVhy two Trepans are to be uſed to a fractured ſuture.

To conclude, when for what cauſe ſoever we cannot make uſe of a Trepan, we may imploy this inſtrument, if ſo be as much of the bone be bared as is needfull. It is made in form of a pair of Compaſſes, and by means of a ſcrew may be opened more or leſs as you pleaſe. You as need ſhall require may change the points, and put other into their places, for they may be fitted to one ſide of the compaſs with a ſcrew.

*A pair of cutting Compaſſes to cut forth the skull.*



A. *Shews the one leg of the cutting compaſſes, which as you carry it about cuts the skull.*

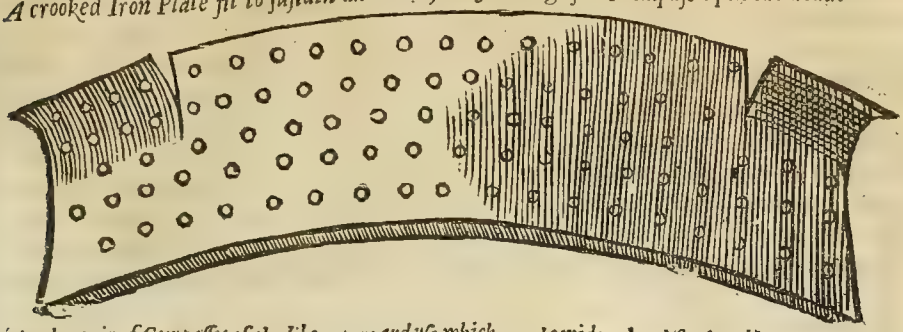
B. *The ſcrew which faſtens the point to the leg of the compaſſes.*

C.C. *Two different points which may be ſcrewed to the leg of the compaſſes, as need ſhall require.*

D. *A great ſcrew which faſtens upon an Iron ſtring, alongſt which the one of the legs of the compaſs running, may be widened & ſtraitned as you pleaſe.*

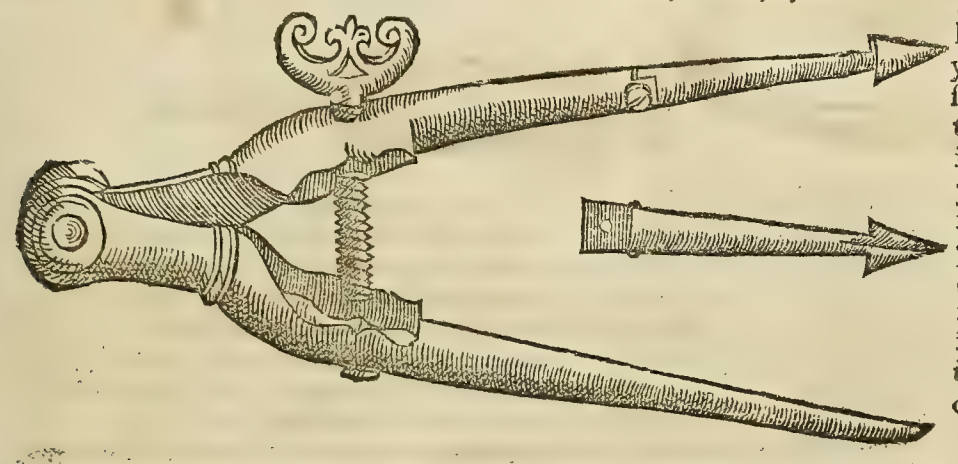
More-

*A crooked Iron Plate fit to ſuſtain and hold ſteddy one leg of the compaſs upon the head.*



Moreover it is fit that the one leg of ſuch cutting compaſſes ſhould ſtand firm and ſteddy, whilſt the other is drawn circularly to cut. Wherefore it is fit you have an Iron plate made full of little holes, wherein you may firmly ſtay that leg of the compaſs, leſt it waver againſt your will; it is requiſite that this plate be crooked, (becauſe the head is round) that ſo it may be fitted to any part thereof.

*Another pair of Compaſſes of the like nature and uſe, which may be widened and ſtrained by a ſcrew.*



## CHAP. XIX. *Of the places of the ſkull whereto you may not apply a Trepan.*

FIrſt of all, you ſhall not apply a Trepan, to a bone that is ſo broken that it is wholly, or in the greater part thereof divided from the skull by the violence of the ſtroak, leſt by your weight & preſſing of the trepan, you force it down upon the membrane. Secondly, you muſt not apply one to the fractured Sutures, for the reaſons mentioned in the former chapter. Thirdly, nor to that part of the forehead which is a little above the eye-browes, for theſe reaſons we gave you before in the twelfth chapter. For there is in that place under the firſt table of the skull it ſelfe, a large cavity repleniſhed with a certain white and tough humor, as alſo with a certain ſpirituous and ayrie ſubſtance, placed there by nature, to prepare the aire which aſcends to the brain by the Noſtrills: unleſſe the Chirurgeon obſerve and be mindfull hereof, he may be deceived, ſuppoſing this cavity to be an Effracture of the bone and a depreſſion thereof. Fourthly, neither in the loweſt parts of the skull, leſt the marrowy ſubſtance of the Brain, by reaſon of its weight, ſhould ſlide through the hole made by the Trepan. Fifthly, neither to the *Bregma* bones of Children, as thoſe which as yet have not acquired juſt ſolidity, to endure the impreſſion of a Trepan. Sixtly, nor to the temples by reaſon of the Temporall muſcle, the cutting whereof in the opinion of *Hippocrates* cauſes convulſion of the oppoſite part. For being cut athwart it loſes its proper action, that is, to move and lift up the lower law; but then the oppoſite Temporall muſcle being whole and perfect, uſing its ſtrength, (his antagoniſt ſuffering it, and not reſiſting or labouring any thing at al to the contrary) it draws the ſame law to it, whereupon the mouth and all the parts of the face are drawn awry, and ſuffer a Convulſion towards the ſound part, the other being reſolved according to *Hippocrates* his rule. For as often as the muſcles of one kind are equall in number, magnitude and ſtrength on each ſide, the reſolution of the one part, cauſes the Convulſion of the other.

*A bone almoſt ſevered from the skull muſt not be trepaned.*

*A notable cavity in the forehead bone.*

*Lib. de Vul.*

*A rule out of Hippocrates.*

Neither doth this danger alone ariſe from the cutting of the Temporall muſcle, but alſo another, which is, that this muſcle when we eat and ſpeak, is in perpetuall motion, whereby it comes to paſs, that being once cut it is ſcarſe ever united again, beſides alſo the commiſſure or joyning together of the ſtony bones lye under it. But by the ſecond caution we are forbid to trepan upon the ſutures; moreover alſo many veins, arteries and nerves are ſpred over the ſubſtance thereof, ſo that by cutting of them, there is danger of many and malign ſymptomes, as pain, inflamation, a feaver, a convulſion not only of the part it ſelf, but alſo of the whole body, whence laſtly death inſues. Wherefore let no Chirurgeon be ſo fool hardy, as to attempt the cutting of this muſcle ſo to trepan the bone which lies under it; rather let him apply his Trepan above it, or on the ſide thereof, or as neer to the affected part as he can, as I did in a Gentleman called *Monſieur dela Breteſche*. He in the triumphant entrance of King *Henry* the ſecond, into the City of *Paris*, was ſo hurt with a ſtone, that the *Os Petroſum* or ſcaly bone, was broken with the violence of the blow, and the temporall muſcle was vehemently contuſed, yet without any wound. I being called the next day (viewing the manner of the hurt, & the condition of the wounded part) thought good to bring ſome Phyſitians, and Chirurgeons with me to conſult hereof, of whom when ſome thought it expedient preſently to divide the temporal muſcle that baring the bone we might apply a Trepan, and ſo take forth the broken bones: I on the contrary, begun earneſtly to withſtand that opinion, citing that ſaying of *Hippocrates*, *ex libro de vulneribus Capitis*, wherein Chirurgeons are forbidden to cut ſuch muſcles, for fear of the forementioned ſymptomes; alſo I cited experience, how that I had often obſerved all thoſe which had this muſcle

What diſcommodities ariſe from cutting the temporall muſcles.

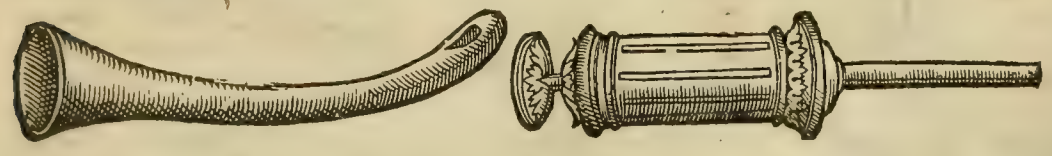
*A Hiſtory.*

cut

cut,dyed with a convulſion;but that it ſhould be far better, that neer above the fracture the bone ſhould be trepaned, not touching the Temporall muſcle at all if he could. When all of them at the laſt had inclined to my opinion, I preſently divided the muſculous skin which was over the upper part of the fracture with a three cornered ſection: the day following which was the third of his diſeaſe,I trepaned him, and after I had done,ſome few dayes after,I took out ſome four ſplinters of the broken bone;and I put in a plain leaden pipe,by which(I wiſhing the Patient ever when I dreſt him to hold down his head,to ſtop his mouth and his noſe,and then ſtrive as much as in him lay to put forth his breath)much ſanious matter came forth,which was gathered between the skull and *Craſſa Meninx*.Other filth which ſtuck more faſt, I waſhed out with a detergent decoction, injected with ſuch a ſyringe as is here expreſt; And I did ſo much, God bleſſing my indeavours,that at length he recovered.

*A plaine leaden pipe for to carry forth the* Sanies *gathered under the skull.*

*A little ſyringe fit to make injections withall.*



A hiſtory.

The like chance and fortune befell *Monſieur de Pienne* at the ſiege of *Mets*. For he as he fought at the breach of the wall,had the bone of his Temples broken with a ſtone ſtruck out of the adjacent wall,by a pecce of Ordinance ſhot from the Emperours campe,he preſently fel down with the blow, and caſt blood out of his mouth,noſe and ears, with much vomiting,and remained dumb and as it were ſenſleſs almoſt fourteen dayes, ſo that he knew none of the by-ſtanders. He had often palpitations; and convulſive twitchings,and his face was ſwoln. His forehead bone was trepaned at the ſide of the temporall muſcle by the hand of *Peter Aubert* the Kings Chirurgeon: and although on the 25.day,ſoft fleſh endued with exquiſite ſenſe grew out of the hole made with the Trepan, whoſe growth could not be hindered by Cathæretick pouders,yet at the length he recovered. The Ancients called this kind of growing fleſh a *Fungus* [*i.*a Muſhrome] for that it is ſoft, and grows with a ſmall root and broad top like a muſhrome:but it increaſes and decreaſes,according to the plenty of the flowing matter, and induſtry of the Chirurgeon hindering by art the growth thereof. This fleſh ſtinks exceedingly,they commonly call it*Ficus ſancti Fiacrii* [*i.*the fig of S. *Fiacrye.*]This diſeaſe commonly hath its original after this manner.Even as in the bodies of trees from the excrements of nouriſhment,a certain half putrid,groſs and viſcous humor ſweats through the bark, and gathered together by little and little grows into a Muſhrom,ſo blood melancholy both in temper and conſiſtence,ſprings from the broken veſſells of the skull and *Craſſa Meninx*,which alſo is ſent ſometimes by nature for the neceſſary repairing of the fleſh in theſe parts, whereupon a certain *fungus* breeds, which in *Galens* opinion,favors or partakes of the nature & conditionof the parts to which it grows though in generall it be of the nature of malign warts, or excreſcences. But for to take away ſuch *Fungi*,you muſt apply medicines which have a ſpecifick faculty to waſt ſuperfluous fleſh; ſuch are theſe which ſtrongly dry,and gently waſt and eat,ſuch as this which follows.℞ *Sabinæ* ʒ ij.*ocreæ* ʒj.*pulveriſentur ſimul, aſpergatur caro excreſcens.* Or elſe ℞ *Hermodactylorum combuſtorum* ʒʃʃ, make a pouder for the ſame uſe. But if ſo be that this fungous fleſh come to ſuch growth,(as it often happens)as to equall the bigneſs of an egg, it muſt be tied and ſtrait twitched, cloſe to the root with a ſilken thred;and when it ſhall fall away by reaſon of this binding,the place muſt be ſtrewed with the forementioned pouders, for ſo it will be more certainly cured,than with more acrid cathæreticks.

The generation of a *Fungus*.

## CHAP. XX. *Of the corruption and* Caries, *or rottenneſs of the bones of the Head.*

Why when the skull is broken the bones ſometimes become foul or rotten.

THere ſometimes follows a corruption and Sphacell of the fractured bones of the skull upon wounds of the head;which happens either becauſe they are touched by the air,which they are not ſenſible of; or for that the *Sanies* putrefying and detained under them,hath infected them with like putrefaction;or by the cure unskilfully handled,they by the raſh application of ſuppurating and oyly medicines becoming more moiſt,and ſo undergoing an unnaturall change of their proper complexion and native temper,as we ſhall ſhew more at large, when we ſhall treat of the reaſon of the *Caries* in the *Lues venerea*.We ſhall know this unnaturall change and corruption,partly by ſight,that is,when from white they become to be yellowiſh,livid and black;partly alſo by putting down a Probe,when as it meets with nothing ſmooth and ſlippery, but feels rough in many places,and beſides alſo when it enters and eaſily penetrates with a ſmall thruſting down into their ſubſtance,as if it were fungous. Yet this laſt ſign may often deceive you,for I have divers times obſerved rotten bones, which being bare had long ſuffered the injury of the air, to become ſo hard that a Trepan would ſcarſe pierce them; for it is putrid humidity which makes the bones ſoft and fungous;but the air by drying them exhauſts this humidity, and laſtly dryes it, whence follows ſuch contumacious harndeſs.This ſign will be far more certain, if the fleſh which is grown upon the bone be more ſoft than is fit,looſe and have little or no ſenſe of feeling. You may correct and amend this corruption of the bone with cauteries as well actuall,as potentiall,or with the powders of Aloes, Gentian,*Ariſtolochia*,centaury, *cortex pini*, as ℞, *radic.Ireos,Flor. ariſtolochiæ an.* ʒ j. *centaur.* ʒ ij,*corticis pini* ʒ ʃ,*Miſce & fiat pulvis ſubtiliſimus oſsi inſpergendus.* But if it be much corrupted,it muſt be ſcraped forth with your *Scalpra*.And you muſt expect the falling or ſcaling of the corrupt bone from the ſound,and not forcibly procure it; for otherwiſe the ſound bone,which lies under it,being as yet covered with no fleſh growing over it,would be corrupted by the appulſe, or touch of the air. Yet you ſhall by little and little gently move and ſhake rotten bones with your probe,

Corrupt bones are ſometimes hard.

The ſigns of foulneſs of the bone.

probe, that so they may more easily scale and with less trouble to nature. But note by the way, that the scaling of the bone which hath invironed the Trepan, is commonly performed in the space of forty or fifty dayes. So long also will that caused by the unusuall appulse or touch of the air, or application of a cautery, or the aspersion of the Cephalick pouders; besides also in the same number of dayes broken bones may be united and joyned together by a *Callus*, which is to them as a scar, yet sometimes sooner, somewhiles later, according to the variety of the ages, tempers and habits of divers men. But if the *Caries* or *rottennesse* can neither by these fore-mentioned remedies be orecome and amended, neither the loosed continuity agglutinated nor united, you must give the Patient a vulnerary potion, for hence I have found happy success in many. But sometimes not only a certain portion of the bone, is taken with a *Caries*, but also the whole is often seised upon with sphacell, and all fals out. For in *Hippocrates* opinion, *Lib. de vulneribus capitis*, the bone of the skull being broken falls from the sound more or less, according to the violence of the blow; which also is confirmed by experience. For which purpose I think good in this place to recite a History, whereof I was an eye-witness, whilst I served as Chirurgeon in *Piemont* under the Marshall *de Montejan* (who was the Kings Lieftenant there.) It happened that a Lackey of *Monsieur de Goulaines* came to me to be cured; he had the *Bregma* bone of the left side broken with a sword, neither yet did the fracture come to the second Table; a few dayes after his recovery the bone being agglutinated and united, it came to pass that a company of *Gascoine* souldiers his countrymen came to *Turin*, with whom one morning he eat plentifully Tripe fryed with Onions and spices, and drunk a great quantity of strong wine. Whereupon he presently fell into a continuall Feaver, and lost his speech and understanding; his head swelled, his eyes looked red and fiery and as though they would have started out of his head. Which things being considered, I let him blood, having first (by the Physitians advice) given him a Glyster, and applyed to his head such things as were fit; and also I laboured with Frictions and Ligatures of the extream parts to draw the humors downwards; yet for all this the part of the head which was formerly affected begun to impostumate; which being opened, there came forth a great quantity of matter, and at the length the musculous skin and *Pericranium* sinking down, both the Tables of the skull became putrefied and rotten, as you might know by their blackness and stench. Now to take away this corruption, I applyed at certain times actuall cauteries, both to amend the corruption and separate that which was altered: but mark, after some months space, a great number of worms came forth by the holes of the rotten bones from underneath the putrefied skull; which moved me to hasten the separation and falling away of the putrid bones. Which being done, upon the very *Crassa Meninx*, which is more strange, in that place, which nature had covered with flesh, I observed three cavities of the largeness of ones thumb filled with worms about the bigness of a points tag, with black heads, diversly wrapped amongst themselves. The bone which nature separated was of the bigness of the palm of ones hand, so that it was strange that so large a portion of the skull should be cast off by nature, and yet the Patient not dye thereof; for he recovered yet beyond all mens expectation, but after the agglutination of the wound the scar remained very hollow according to the decree of *Hippocrates*. For flesh doth not easily grow upon a *Callus*, because it is a thing strange and supposititious by nature; besides, as a scar is a thing more dense than the skin, so is a *Callus* than the bone, so that through the more compact substance thereof, the blood can neither freely nor plentifully sweat through for matter to regenerate flesh. Hence it is, that whersoever any portion of the skull is wanting, you may there by putting to of your hand perceive and feel the beating of the brain, wherefore the skull must needs be much weaker in that place. Now to help this infirmity, I wished this Lacky to were a Cap made of thick leather, so more easily to withstand externall injuries: and verily thereby he grew much better. Now I think good in this place to lay open the deceit and craft of some Impostors falsly stiling themselves Chirurgeons, who when they are called to cure wounds of the head, wherein any part of the skull is lost, perswade the Patient and his friends, that they must put a plate of gold in the place of the skull which is wanting. Wherefore they hammer it, in the presence of the Patient, & turne it divers wayes & apply it to the part, the better to fit it; but presently after they slily convey it into their purses, and so leave the patient thus cousened. Others brag that they are able to put the dryed rind of a gourd into the place of the lost bone, and fasten it on to defend the part; and thus they grossely abuse those which are ignorant in the Art. For this is so far from being done that nature will not suffer nor endure so much as an haire, or any other small body to be shut up in a wound when it is cicatrized; neither is the reason alike of a leaden bullet which shot into the body lies there for many years without any harm to the patient; for although lead have a certain familiarity with mans body, yet is it at length (unless the density of the opposed flesh, ligament, tendon, or some other such like substance hinder) thrust forth by nature impatient of all strange bodies. And thus much of the rottennesse and corruption of fractured bones; now must we speak of the discommodities which befall the *Meninges* by wounds whereby the skull is broken.

The benefit of a vulnerary potion.

A History.

A great falling away of a corrupt bone.

*Aph.* 45. *Sect.* 6.

The covetous craft of impostors.

## CHAP. XXI. *Of the discommodities which happen to the* Crassa Meninx *by fractures of the skull.*

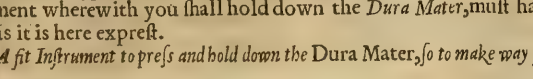
MAny discommodities chiefly happen to the *Crassa meninx* by a fracture of the skull and rash trepaning thereof; for it sometimes chances to be cut and torn. Agglutination is a remedy for this disease, which *Hippocrates* wishes to be procured with the juice of *Nepeta* [that is, of that calamint, which smells like Penny-royall] mixed with barly floure. Instead whereof this following powder having the like faculty may take place.

℞ *Colophon.* ℥ij. *Myrrhæ, aloes, mastiches, sanguinis Dracon. an.* ʒj. *croci, sarcocollæ an.* ℥ß. *misce & fiat pulvis subtilis.* But to purge the blood and matter which is gathered and lyes between the *Crassa meninx* and skull, you shall put in a Tent made of a rag twined up some foure or five double, and steeped in syrup

Remedies for the lacerated *Meninx*.

rup of Roſes or wormwood and a little *Aqua vitæ*;for thus you ſhal preſs down both the *Craſſa Meninx*,left lifted up by the accuſtomed and native pulſation of the brain,it ſhould be hurt by the edges of the skull, yet rough by reaſon of the ſharp ſplinters of the bone lately trepaned, and give freer paſſage forth for the matter there contained. But as oft as you ſhall dreſs the Patient, you ſhall renue the forementioned Tent,untill all the matter be purged forth. And ſo often alſo you ſhall preſs down with the following inſtrument the *Dura Mater*, and bid the Patient to ſtrive to put forth his breath,ſtopping his mouth and noſe, that ſo the matter may more eaſily be evacuated. This Inſtrument wherewith you ſhall hold down the *Dura Mater*,muſt have the end round, poliſht and ſmooth as it is here expreſt.

*A fit Inſtrument to preſs and hold down the* Dura Mater,*ſo to make way for the paſſage forth of the* Sanies *or Matter.*



And let there be laid upon the *Dura Mater* ſtrewed over with the formerly mentioned powder, a ſpunge moiſtened and wrung forth of a drying decoction made of aromatick and cephalick things, ſuch as this which followes. ℞ *Fol. ſalviæ,majoran.betonicæ,roſar.rub.abſinth.Myrtil.florum chamæm. melil. ſtœchad.utriuſque an. M.iij.ß.rad.cyperi,calam. aromat.ireos, caryophyllatæ, angelicæ, an.℥ß.bulliant omnia ſecundum artem cum aqua fabrorum & vino rubro,fiat decoctio ad uſum dictum.* And in ſtead hereof you may uſe claret with a little *aqua vitæ*,that ſo the contained matter may be evacuated and dryed up. A ſpunge is fitter for this purpoſe to draw than a linnen rag or any other thing,both becauſe it is good of it ſelf to draw forth the humidity,as alſo for that by its ſoftnes it yeelds to the pulſation of the Brain.Then apply to the wound & all the adjoining parts,an emplaſter of *Diacalcitheos* diſſolved with vinegar,or wine, or oyl of Roſes,that ſo the plaſter may be the more cold and ſoft. For in *Hippocrates* opinion, nothing which is any thing heavy or hard muſt be applyed to wounds of the head, neither muſt it be bound with too ſtrait,or hard a ligature,for fear of pain and inflammation.

A ſpunge fit to foment withall.

*Lib.de vuln. cap.*

*Lib.de faſciis.*

The diſcommodities of too ſtrait binding of the head.

What cloathes we muſt uſe.

How the patient muſt lye in his bed.

For *Galen* tells (as he had it from *Mantias*) that a certain man had loſt his eyes by inflammation and impoſtumation ariſing, for that an Apothecary had uſed too ſtrait a ligature to his head and face;for this ſtrait ligature ſo preſſed the ſutures, that the fuliginous vapours, which uſed to paſs through them and the pores of the skull,were ſtopped from paſſing that way;beſides, the beating of the Arteries was intercepted and hindered;by which means the pain and inflammation ſo encreaſed, that his eyes were rent and broke in ſunder and fell forth of their orb. Wherefore *Hippocrates* rightly commends an indifferent ligature: alſo he fitly wiſheth us to let the emplaſters be ſoft which are applyed to the head,as alſo the cloaths wherewith it is bound up, to be of ſoft and thin linnen, or of Cotton,or wooll.When the patient is in dreſſing,if there come much matter out of the wound, you ſhall wiſh him if he can, to lye upon the wound, and now and then by fits to ſtrive to breath, ſtopping his mouth and noſe, that ſo the brain lifted and ſwoln upwards, the matter may be the more readily caſt forth;otherwiſe ſuffer him to lye ſo in his bed,as he ſhall beſt like of,& ſhall be leaſt troubleſome to him. You may with good ſucceſs put upon the *Craſſa Meninx* oyl of Turpentine with a ſmall quantity of *aqua vitæ* and a little Aloes and Saffron finely powdred, to cleanſe or draw forth the *Sanies*,or matter. Or elſe, ℞ *Mellis roſar.℥ij.farinæ hord.pulver.aloes,maſtich.& Ireos florent.an. ℥ß.aqua vitæ parum*;let them be incorporated together & make a deterſive medicine for the foreſaid uſe.

*Paulus lib. 6.cap.90.*

Sometimes alſo the *Craſſa Meninx* is inflamed after Trepaning,and ſwoln by a *Phlegmon*, that impatient of its place,it riſes out of the hole made by the Trepan, and lifts it ſelf much higher then the skull,whence grievous ſymptoms follow. Wherefore to prevent death,of which then we ought to be afraid,we muſt inlarge the former hole with our cutting mullets,that the matter contained under the skull,by reaſon of whoſe quantity the membrane ſwells,may the more freely breath and paſs forth;and then we muſt goe about by the preſcript of the Phyſitian to let him bleed again,to purge and diet him.The inflammation ſhall be reſiſted by the application of contrary remedies,as this following fomentation. ℞ *Sem.lini,althæ,fan. pſilii,roſ.rub.an.℥j.ſolani,plantag.an. M.j.bulliant in aqua tepida communi,ex qua fiat fotus.* Anodyne and repelling medicines ſhall be dropped into his eares, when it is exceedingly ſwoln, that the tumor may ſubſide,you ſhall caſt upon it the meal or floure of lentills,or vine leaves beaten with Gooſe greaſe.With all which remedies if the tumor doe not vaniſh, and withall you conjecture that there is *Pus* or matter contained therein,then you muſt open the *Dura Mater* with your inciſion knife,holding the point upwards & outwards, for ſo the matter will be poured forth and the ſubſtance of the brain not hurt nor touched.Many other Chirurgeons, and I my ſelf have done this in many patients with various ſucceſs. For it is better in deſperate cauſes to try a doubtfull remedy then none at all; alſo it oft-times happens,whether by the violence of the contuſion and blow,or concretion or clotting of the blood which is ſhed, or the appulſe of the cold ayre,or the raſh application of medicines agreeing neither in temper nor complexion with the *Craſſa Meninx*,or alſo by the putrefaction of the proper ſubſtance,that the *Dura Mater* it ſelf becomes black. Of which ſymptome the Chirurgeon muſt have a great and ſpeciall care.

Remedies for the inflammation of the *Craſſa Meninx.*

How we muſt open the *Craſſa Meninx* when it is impoſtumate.

The cauſes and remedies of the blackneſs of the *Dura Mater.*

Therefore that thou mayſt take away the blackneſs, cauſed by the vehemency of the contuſion, you ſhall put upon it oyl of egges with a little *Aqua vitæ*, and a ſmall quantity of Saffron and Orris roots in fine powder;you ſhall alſo make a fomentation of diſcuſſing and aromatick things boyled in water and wine;and *Vigoes* Cerat formerly deſcribed ſhall be applyed. But if the harm come from congealed blood,you ſhall withſtand it with this following remedie. ℞ *Aqua vitæ ℥ij. granor. tinctorum in tenuem pulverem tritorum℥ijß.croci,ʒi. Mellis roſat.℥jß.ſarcocol. ℥iij. Leviter & ſimul bulliant omnia,& de colatura infundatur,quouſque nigrities fuerit obliterata.* If this affect come by the touch of the ayre,it ſhall be helped with this following remedy. ℞ *Tereb.ven.℥iij. Mellis roſ. ℥ij. Vitellum ovi unum*

Remedies for contuſion.

For congealed blood.

*num farin.hordei* ʒiij.*croci* ℈j.*sarcocol.* ʒij.*aq.vitæ* ʒij.*Incorporentur simul,& bulliant paululum.* This remedy shall be used untill the blackness be taken away,and the membrane recover its pristine colour. For the hurt received by the ayre.

But if this affect proceeds from the rash use of medicines, it must be helped by application of things contrary. For thus the offence caused by the too long use of moist and oyly medicines, may be amended by using catagmatick and cephalick powders; but the heat and biting of acrid medicines,shall be mitigated by the contrary use of gentle things; for both humid and acrid things somewhat long used make the part look black, that truly by generating and heaping up filth, but this by the burning and hardening heat.But when such blackness proceeds from putrefaction, *Iohn de Vigo* commends the following remedy. ℞ *aquæ vitæ* ʒij.*mellis rosat.* ʒβ. But if the affect be grown so contumacious that it will not yeeld to this gentle remedy,then this following will be convenient. ℞ *Aq.vitæ* ʒiij.*mellis ros.* ℥j.*pulver. Mercur.* ʒij. *unica ebullitione bulliant simul ad usum dictum.* Or ℞ *aquæ vit.* ʒjβ.*syrup.absinth. & mellis rosat.an.*ʒij. *unguenti ægyptiaci* ʒ.β.*sarcocol.myrrhæ, aloes,an.* ʒj.*vini albi boni & odoriferi,*ʒj.*bulliant leviter omnia simul,colentur ad usum dictum.* But if the force of the putrefaction be so stubborn,that it will not yeeld to these remedies, it will be helped with *Ægyptiacum* (made with plantain water in stead of Vinegar) used alone by it self, or with the powder of *Mercury* alone by it self,or mixt with the powder of Alome. Neither must we be afraid to use such remedies especially in this extream disease of the *Dura Mater*; for in *Galens* opinion the *Crassa Meninx* after the skull is trepaned delights in medicines that are acrid,that is, strong and very drying, especially if it have no *Phlegmon*; and this for two reasons; the first is, for that hard and dry bodies, such as membranous bodies are,be not easily affected unless by strong medicines; the other is, which must be the chiefe and prime care of the Physitian,to preserve and restore the native temper of the part by things of like temper to it. But if the auditory passage not onely reaching to the hard membranes of the Brain,but also touching the Nerve which descends into it from the brain, suffer most vehement medicins,though it be placed so neer; certainly the *Crassa Meninx* will endure them far more easily and without harm. But if by these means the putrefaction be not restrained, and the tumor be encreased so much, that the *Dura Mater* rising far above the skull, remains unmoveable, black and dry,and the patients eyes look fiery, stand forth of his head and rowl up and down with unquietness and a phrensie,and these so many ill accidents be not fugitive,but constant; then know that death is at hand,both by reason of the corruption of the gangræn of a noble part, as also by extinction of the native heat.

Medicins against that putrefaction of *Meninx*.

VVhy the *Crassa Meninx* easily endures acrid medicins.

Signs of death at hand.

## CHAP. XXII. *Of the cure of the Brain being shaken, or moved.*

WE have formerly declared the causes,signes and symptomes of the concussion, or shaking of the Brain,without any wound of the musculous skin, or fracture of the bone; wherefore for the present I will treat of the cure. Therefore in this case, for that there is fear that some vessell is broken under the skull,it is fit presently to open the cephalick vein.And let blood be plentifully taken according to the strength of the Patient,as also respectively to the disease both which is present,and like to ensue, taking the advice of a Physitian. Then when you have shaven away the haire,you shall apply to the whole head and often renue the forementioned cataplasme,*Ex farinis,oleo rosaceo,oxymelite*,and other like cold and moist repelling medicins. But you must eschew dry,and too astringent medicins must be shunned,such as are *Unguentum de bolo* and the like;for they obstruct too vehemently,and hinder the passage forth of the vapours both by the sutures and the hidden pores of the skull.Wherefore they doe not only not hinder the inflammation, but fetch it when it is absent,or encrease it,when present. The belly shall be looséd with a clyster, and the acrid vapours drawne from the head; for which purpose also it will be good, to make frictions from above downwards, to make straight ligatures on the extream parts, to fasten large cupping-glasses with much flame to the shoulders and the originall of the spinall marrow,that so the revulsion of the blood running violently upwards to the brain,aud ready to cause a phlegmon, may be the greater.The following day it will be convenient to open the *Vena Puppis*,which is seated upon the Lambdall suture,by reason of the community it hath with the veins of the brain, & shutting the mouth and nose to strive powerfully to breath.For thus the membranes swell up, and the blood gathered between them and the skull is thrust forth; but not that which which is shut up in the brain and membranes,of which if there be any great quantity,the case is almost desperate,unless nature assisted with stronger force, cast it forth turned into *Pus*. But also after a few dayes the *vena frontis* or forehead vein may be opened,as also the Temporall Arteries and Veins under the tongue, that the conjunct matter may be drawn forth by so many open passages. In the mean space the Patient must keep a spare diet,and abstain from wine,especially untill the fourteenth day,for that untill that time the fearfull symptomes commonly reign. But repelling medicins must be used untill the fourteenth day be past,then we must come to discussing medicins, beginning with the more milde, such as is this following decoction.℞ *rad. Alth.* ʒvj.*irecos,cyperi,calami arom.an.* ʒij.*fol.salviæ,majoran.betonic.flor.chamæm.melil.ros.rub.stœchad.an. M.*ß.*salis com.* ʒiij.*bulliant omnia simul secundum artem cum vino rub.& aquæ fabrorum,fiat decoctio.*Let the head be washed therewith twice a day with a spunge. But yet when you do this,see that the head be not too much heated by such a fomentation,or any such like thing, for fear of pain and inflammation. Then you shall apply the cerate of *Vigo* which hath power to discusse indifferently,to dry, and draw forth the humors which are under the skull, and by its aromatick force and power to confirme and strengthen the brain; it is thus described. ℞ *Furfuris bene triturati* ʒiij.*farin.lentium* ʒij. *ros. myrtillor. foliorum & granorum ejus, an.* ʒj. *calam. aromat.*℥jß.*chamæmel.melil.M.*ß.*nuces cupressi num.*vj.*olei rosacei,& chamæm.an.*ʒiij.*ceræ albæ* ʒiiß,*thuris,mastichis,an.*ʒiij.*myrrhæ* ʒij. *In pulverem quæ redigi debent radactis,& liquefactis oleis cum cera,omnia misceantur simul,& fiat mixtura,quæ erit inter formam emplastri & ceroti.*

The opening of the *Vena Puppis*.

A discussing fomentation.

A caution in fomenting the head.

A description of *Vigoes* Cerate.

A Hiſtory.

*Vigo* ſaith, that one of the Duke of *Urbins* Gentlemen found the urine hereof to his great good. He fel from his horſe with his head downwards upon hard Marble, he lay as if he had been dead, the blood guſht out of his noſe, mouth and ears, and all his face was ſwollen and of a livid colour; he remained dumb twenty dayes, taking no meat but diſſolved gellies, and Chicken and Capon broths with ſugar; yet he recovered, but loſt his memory, and faultered in his ſpeech all his life after. To which purpoſe is that Aphoriſm in *Hippocrates*; Thoſe which have their Brain ſhaken by what cauſe ſoever, muſt of neceſſity become dumb; yea alſo, as *Galen* obſerves in his Commentary, loſe both their ſenſe and motion. That Cerat is not of ſmall efficacy, but of marvellous and admirable force, which could hinder the generating of an abſceſs, which was incident to the brain by reaſon of the fall. Yet there be many men ſo far from yeelding to reaſon, that they ſtifly deny, that any impoſtumation can be in the brain; and augmenting this errour with another, they deny that any who have a portion of the brain cut off can recover, or riſe again; but the authority of ancient writers and experience do abundantly refell the vanity of the reaſons whereon they rely. Now for the firſt, in the opinion of *Hippocrates*; If thoſe which have great pain in their heads have either *pus*, water or blood flowing from their Noſe, mouth or ears, it helps their diſeaſe.

*Aph.* 58. *ſect.* 7.

That there may be an abſceſs in the brain.

*Aph.* 10. *ſect.* 6.

*Gal. lib. de inæqual. intemp. Rhaſ. cap.* 4. *continent. Avicen. cap. de exit. ſen.* 3 *lib.* 4. *cap.* 20.

But *Galen*, *Rhaſis*, and *Avicen* affirm that *Sanies* generated in the brain disburdens it ſelf by the noſe, mouth or ears; and I my ſelf have obſerved many who had the like happen to them.

A Hiſtory.

I was told by *Prothais Coulen*, Chirurgeon to *Monſieur de Langey*, that he ſaw a certain young man in the town of *Mans*, who often uſed to ring a great bell; he once hanging in ſport upon the rope, was ſnatcht up therewith and fell with his head full upon the pavement: he lay mute, was deprived of his ſenſes and underſtanding, & was beſides hard bound in his belly. Wherefore preſently a feaver and *delirium* with other horrid ſymptomes aſſayled him, for he was not trepaned becauſe there appeared no ſign of fracture in the skull: on the ſeaventh day he fell into a great ſweat with often ſneeſing, by violence whereof a great quantity of matter and *Pus* flowed forth of his ears, mouth and noſe, then he was eaſed of all his ſymptomes, and recovered his health.

*Lib.* 8. *de uſu part. & com. ad aph.* 18. *ſect.* 6.

Now for the ſecond, *Galen* affirms that he ſaw a boy in *Smyrna* of *Ionia* that recovered of a great wound of the brain, but ſuch an one as did not penetrate to any of the ventricles. But *Guido* of *Cauliac* ſaith, he ſaw one which lived and recovered after a great portion of the brain fell out by reaſon of a wound received on the hind part of his head. In the year of our Lord 1538. while I was Chirurgeon to the Marſhall of *Montejan* at *Turin*, I had one of his Pages in cure, who playing at quoits received a wound with a ſtone upon the right *Bregma* with a fracture, and ſo great an Effracture of the bone, that the quantity of half a haſell Nut of the brain came forth thereat. Which I obſerving, preſently pronounced the wound to be deadly; a Phyſitian which was preſent contradicted my opinion, affirming that ſubſtance was no portion of the brain, but a certain fatty body. But I with reaſon and experience in preſence of a great company of Gentlemen, convinced the pertinacy of the Man, with reaſon; for that fat cannot be generated under the skull, for although the parts there contained be cold, yet becauſe they are heated by the abundance of the moſt hot and ſubtle animall ſpirits, and the heat of vapours riſing thither from all the body, they do not ſuffer fat to concreat about them. But with experience, for that in the diſſecting of dead bodies, there was never any fat obſerved there; beſides alſo fat will ſwim on the top of water; but this ſubſtance as marrowy, caſt into the water preſently ſunk to the bottome.

Why fat cannot be generated under the skull.

Signs of a fatty ſubſtance.

Laſtly, fat put to the fire becomes liquid and melts; but this ſubſtance being laid upon a hot iron, became dry, ſhrunk up and contracted it ſelf like a peece of leather; but diſſolved not at all. Wherefore all thoſe which were preſent cryed out, that my judgment was right of that ſubſtance that came forth of the skull. Yet though it was cut away, the Page recovered perfectly, but that he continued deaf all his life after.

## CHAP. XXIII. *Of the wounds of the face.*

Why we treat in particular of wounds of the face.

HAving treated of the wounds of the head by their cauſes, ſigns and cure, it follows that we now ſpeak of the wounds of the face, if but for this, that when they are careleſly handled, they leave deformed ſcars in the moſt ſpecious and beautifull part of the body. The cauſes are the ſame which are incident to the skull, that is, externall. But this may be added to the kinds and differences of the wounds, that the life may be out of danger though any one whole part of the face, (as the ear, eye, noſe, lip) may be cut away by a wound, but not ſo in the head or skull. Wherefore beginning at the wounds of the eye-brows, we will proſecute in order the wounds of the other parts of the face.

A thing to be obſerved in wounds of the eye-brows.

This is chiefly to be obſerved in wounds of the eye-brows, that they are oft-times cut ſo overthwart, that the muſcles, and fleſhy pannicle which move and lift them up, are wholly rent and torn. In which caſe the eye-lids cannot be opened, and the eyes remain covered, and as it were ſhut up in the caſes of their lids; ſo that even after the agglutination of the wound, if the Patient would look upon any thing, he is forc'd to hold up the eye-lids with his hand; with which infirmity I have ſeen many troubled, yet oft-times not ſo much by the violence of the wound, as by the unskilfulneſs of the Chirurgeon who cured them; that is, by the negligent application of the boulſters, an unfit ligature and more unfit future. In this caſe the skilfull Chirurgeon which is called to the Patient ſhall cut off as much of the skin and fleſhy pannicle as ſhall ſerve the eye-lids, that ſo they may by their own ſtrength hold and keep open, without the help of the hand: then he ſhall ſow the wound as is fit, with ſuch a ſtitch as the Furriers, and Glovers uſe; and then he ſhall pour thereon ſome of the balſome of my deſcription, and ſhall lay ſuch a medicine to the neighbouring parts. ℞ *Olei roſar.*

*ſar.* ʒ ß, *album.ovor.nu.*ij. *boli armeni, ſanguinis Dracon. Maſtich. an.* ʒ j. *agitentur ſimul, fiat medicamentum.* Then let the part be bound with a fitting Ligature. Afterwards you ſhall uſe *Emplaſt. de gratia Dei, Empl. de Betonica, Diacalcitheos,* or ſome other like, untill the wound be cicatrized. But ſuch like and all other wounds of the face may be eaſily healed, unleſs they either be aſſociated with ſome malign ſymptomes, or the Patients body be repleat with ill humors.

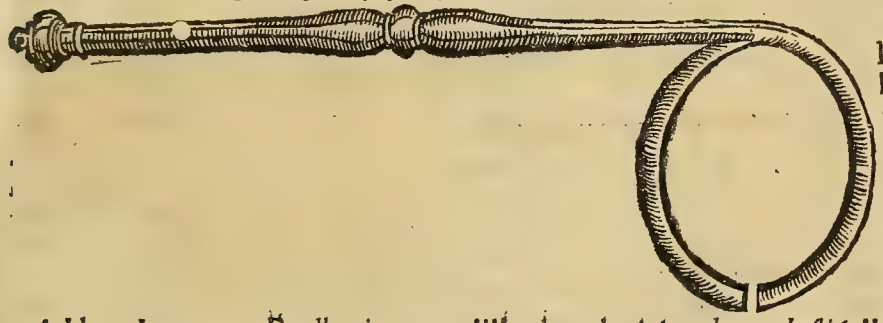
There ſometimes happens a quite contrary accident in wounds of the eye-brows, that is, when the eye-lids ſtand ſo up that the Patient is forc'd to ſleep with eyes open, wherefore thoſe which are ſo affected are called by the Greeks *Lagophthalmi*. The cauſe of this affect is often internall, as a carbuncle or other kind of abſceſs, as a blow or ſtroak. It ſhall be cured by a crooked or ſemicircular inciſion made above the eye-lids, but ſo that the extreams of the ſemicircle bend downwards, that they may be preſſed down and joyned as much as is needfull to amend the ſtifneſs of the eye-lid. But you muſt not violate the griſtle with your Inſtrument, for ſo they could no more be liſted up; the reſidue of the cure muſt be performed as is fit.

*Lagophthalmia* is a quite contrary to the falling down of the eye-lids.

## CHAP. XXIIII. *Of the wounds of the eyes.*

WOunds of the eyes are made by the violence of things pricking, cutting, bruiſing, or otherwiſe looſing the continuity. But the cure muſt alwayes be varied according to the variety of the cauſes and differences. The firſt head of the cure is, that if any ſtrange and heterogeneous body ſhall be fallen into the eyes, let it be taken forth as ſoon as you can, lifting and turning up the eyelid with the end of a *ſpatula*. But if you cannot diſcern this moat or little body, then put three or four ſeeds of *Clary*, or *Oculus Chriſti* into the pained eye. For theſe ſeeds are thought to have a faculty to cleanſe the eyes and take out the moats, which are not faſtened deep in, nor do too ſtubbornly adhere to the membranes. For in this caſe, you ſhall uſe this following inſtrument, for herewith we open the eye-lids the further, putting it between them and the eye, and alſo keeping the eye ſteddy by gently preſſing it, that ſo with our mullets we may pull out the extraneous body; this is the figure of ſuch an Inſtrument.

*The delineation of a Speculum oculi, fit to dilate and hold aſunder the eye-lids, and keep the eye ſteddy, it is ſo made, that it may be dilated and contracted according to the greatneſs of the eyes.*



All ſtrange bodies taken out, let this medicine be put into the eye. Take the ſtrains of a dozen egs, let them be beaten in a leaden Mortar, with a little Roſe water, and ſo put into the eye; but let this repercuſſive be laid upon the eye and the neighbouring parts. ℞. *albumin.ovor.nu.*iiij. *pulver. aluminis rochæ combuſti* ʒ ij. *ſanguinis Draconis* ʒj. *aquæ roſar. & plantag. an.* ʒ ij. *agitentur ſimul,* make a repercuſſive, which you may frequently uſe. Or elſe apply cheeſe curds well wrung, mixed with roſewater, the white of an egge, and as much *acacia* as ſhall ſuffice. This which followeth doth more powerfully ſtay the flowing humor. ℞ *gum arab. & tragac. an.* ʒ ij. *pſilii. cydon. ſemin. portul. plant. ſumach. an.* ʒ ij. *fiat mucag. cum aqua plantag. ſolan. & roſar. concinnetur collyrium,* of which you may drop ſome both within and about the eye.

*A* repercuſſive to be put into the eye.

Divers repercuſſives to be applyed to the eye.

But note, that all ſuch remedies muſt be applyed warm, both that they may the better penetrate by their moderate heat, as alſo for that all actuall cold things are hurtfull to the eyes and ſight, becauſe they dull the ſight by incruſtating the viſive ſpirits. For I have known many who have become dull of ſight by the frequent uſing of medicines actually cold to the eyes. I have on the contrary ſeen not a few, who have recovered with the fit uſe of ſuch like medicines, who have had any part of their eye (ſo it were not the *pupilla* or apple of the eye) ſo pricked with a needle or bodkin, that much of the wateriſh humor ran forth thereat.

Things actually cold are hurtfull to the eyes.

The milk of a woman which ſuckles a girl (for that is reputed the cooler) mitigates pain and cleanſes, if it be milked out of the Dug into the ey; to which purpoſe alſo the blood of Turtles, Pigeons or Chickens much conduces; being dropt into the eye by opening a vein under their wings. Alſo this following cataplaſm aſſwageth pain and inflammation, and hinders defluxion, being applyed to the eye and the adjacent parts. ℞. *Carnis pomorum ſub cinere calido decoctorum* ʒ v. *vitellos ovorum num.* iij. *caſiæ fiſtulæ recenter extractæ* ʒß, *mucaginis pſilii, altheæ & cydon. an.* ʒ j. *farin. hordei parum, incorporentur omnia ſimul, fiat cataplaſma.* Alſo ſheeps lungs boyled in milk and applyed warm, and changed as they grow cold, are good to aſſwage pain. But if the too violent heat and pain, ſhall not yeeld to ſuch medicines, but require more vehement, then *Foliorum Hyoſcyami, m.j. ſub. cineribus coquatur, atque in mortario cum mucagine ſeminis pſilii, & cydonior. extract. in aquis ſolani & plantag. piſtetur:* then let this medicine be wrapped in a linnen cloth and applyed to the eyes and temples. The mucilages of *Pſilium*, or Fleawort, and Quince ſeeds extracted in a decoction of Poppy heads and mixed with a little *Opium* and Roſe water, are uſed for the ſame purpoſe. But when there is need of detergent and ſarcotick medicines, then ℞, *ſyrup. roſar. ſiccar.* ʒ j. *aq. fœnic. & rutæ an.* ʒ ij. *aloes lotæ, olibani an.* ʒ ſ. mix them for the foreſaid uſe. The galls of Scates, Hares, and Partridges diſſolved in Eye-bright, and Fennill water, are fit for cleanſing ſuch wounds; as alſo this following *Collyrium.* ℞ *Aquæ hordei* ʒj. ‖ *mellis deſpumati,* ʒ iij. *aloes ter lotæ in aqua plantaginis & ſacchari cand. an* ʒ j, *fiat collyrium.* Alſo this inſuing medicine is very ſarcotick. ℞. *mucagin. gummi olibani, arabici, tragacanth. & ſarcocol. in aq. hordei extract. an.* ʒ iij.

Anodyne medicines for the eyes.

Narcoticks.

Detergent medicines.

A ſarcotick medicine for the eyes.

*aloes ter lotæ in aq. roſarum. ʒ j. ceruſ. uſtæ & lotæ, tutiæ præpar. an. ʒ ß. fiat collyrium.* But here you muſt note, that the coat *Adnata* often ſwells ſo much by reaſon of a wound or ſome other injury, and ſtands ſo forth by the falling down of humors, acceſs and mixture of flatulencies, that it hides the whole *Pupilla*, and hangs forth of the eye-lids, like as if it were an unnaturall fleſhy excreſcence, and it looſes the native colour, and looks very red, ſo that the eye can neither be ſhut nor opened.

Wherewith a young Chirurgeon being deceived, determined to cut away this protuberancy of the *Adnata*, as though it had been ſome ſuperfluous fleſh, and then to waſt it with cathæretick powders, had I not forbidden him, telling him of the certain danger of blindneſs which would thereupon befall the Patient. Wherefore I preſcribed a fomentation of chamomile, melilote, Roſe leaves, wormwood, rue, fennill, and aniſeeds boyled in milk with the roots of Orris and Marigolds. Then I preſently added this following fomentation, being more powerfull and drying. ℞ *Nucis cupreſſi, gallar. balauſt. an. ʒ j. plantag. abſinth. hippuris, flo. chamæm. roſ. rub. an. M. ß. bulliant ſimul cum aqua fabrorum, & fiat decoctum: pro fotu cum ſpongia.* Beſides alſo you may apply a cataplaſm made of barly and bean flowre, the powders of Maſtick, Myrrhe, and Aloes, and ſome of the laſt deſcribed decoction. The tumor beginning to decline, I dropt the flowing liquor into the eye, which hath a very aſtringent, drying and ſtrengthening faculty. Roaſt a new laid egge in Embers untill it be hard, then pill off the ſhel, take forth the yolk, and in place thereof put a ſcruple of Roman Vitrioll in fine powder, then put it in a linnen cloth and wring it hard forth into ſome clean thing, and drop thereof for ſome dayes into the eye, with a little Smiths water wherein Sumach and Roſe leaves have been boyled. I have found by experience the certain force of this remedy; but if notwithſtanding there be a true fleſhy excreſcence upon the coat *Adnata*, it may be taken away by this following powder. ℞ *Oſſis ſepiæ, & teſtæ ovorum calcinatæ an ʒ j. fiat pulvis.* Calcined Vitriol, burnt Alum and the like may be commodiouſly uſed to this purpoſe. Yet you muſt warily make uſe of all ſuch things, and alwayes lay repercuſſives about the eye, that no harm inſue thereof. For divers times acrid humors fall down into the eye with ſuch violence, that they break the Horny coat, whereupon the humors of the eye are poured out. Remember alſo, that in diſeaſes of the eyes, the Patient lye with his head ſomewhat high, and that he keep ſhut not only the pained, but alſo the ſound eye, becauſe reſt is alwayes neceſſary for the grieved part. But one eye cannot be moved without ſome motion of the other by reaſon of the connexion they have by their optick and moving nerves, both the *Meninges* and the *Pericranium*, Veins and arteries; which is the cauſe that when the one ſuffers, the other in ſome ſort partakes therewith.

A drying fomentation.

A medicine to conſume a fleſhy excreſcence without biting.

But if we cannot prevail by all theſe formerly preſcribed medicines fit to ſtay the defluxion, then it remains, that we apply a Seton to the neck; for it is a ſingular remedy againſt inveterate defluxions into the eyes. For we know by dayly experience, that many who have had their ſight dulled by a long and great defluxion, ſo that they were almoſt blind, have by little and little recovered their former ſplendour and ſharpneſs of ſight, when matter once begun to be evacuated by the Seton.

A Seton, a good remedy againſt invererate defluxions into the eyes.

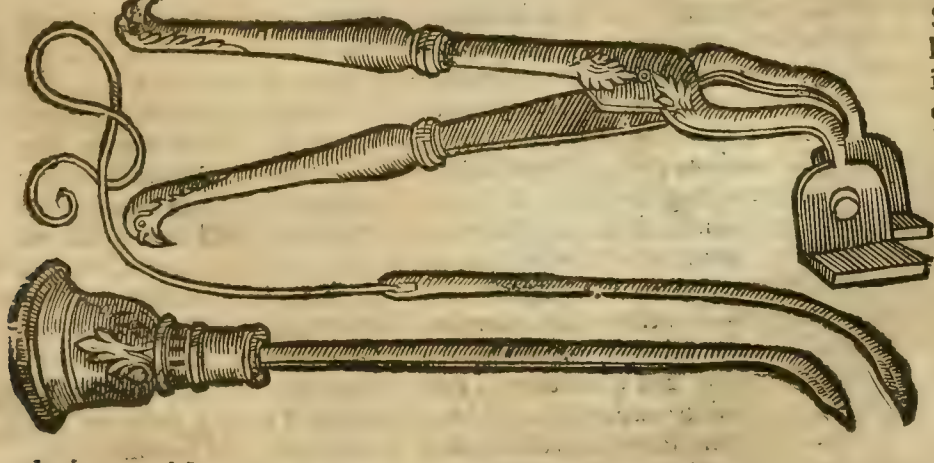
The truth hereof appeared in *Paul* the *Italian* Goldſmith, who dwelt neer the Auſtine Friers. For he having uſed many medicines of divers Phyſitians, and Chirurgeons in vain, when he was almoſt blind, he applying a Seton, by mine advice, began by little and little to ſee better according to the quantity of the matter which was evacuated, untill at length he perfectly recovered his ſight. But at laſt growing weary of the Seton which he had worn for a year (although matter came dayly forth thereof) yet he would have it taken forth, and healed up; but this way of evacuation being ſhut up, and the humor again beginning to flow into his eyes, ſo that he was in danger to become blind, he called me and made me again to apply the Seton in his neck. Whereby recovering his former ſoundneſs and perfection of ſight, he yet wears the Seton.

A Hiſtory.

I alſo once freed by this kind of remedy, by the appointment of the moſt learned Phyſitian *Hollerius*, a certain young man of twenty years old, from the falling ſickneſs, who before had many fits thereof; the Ichorous humors, the feeders of this diſeaſe, being by this means, as it is moſt probable, drawn away and evacuated.

A Seton good againſt the falling ſickneſs.

*A figure of the Pincers, actuall Cautery and Needle uſed in making a Seton.*



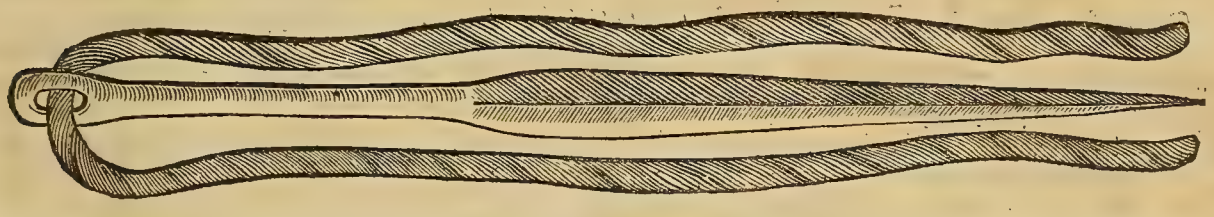
The manner of making a Seton.

Wherefore ſeeing a Seton is of this uſe, I have thought good in this place to ſet down in writing and by figure, the manner of making thereof, for the behoof of young practitioners: wiſh the Patient to ſit on a low ſtool, and to bend down his head, that ſo the skin and fleſhy pannicle may be relaxed; then muſt you with your fingers pluck up and ſever the skin from the muſcles, and take hold of as much hereof as you can with your pincers, not touching the muſcles of the neck for fear of a convulſion and other ſymptomes; you ſhall then twitch the skin which is held in the pincers, moſt hard, when you ſhall thruſt the hot Iron through

through the holes made in the midſt of them; that alſo the nerves being ſo twitched, the dolorifick ſenſe may the leſs come to the part. The wound muſt be made or burnt in long wayes, and not twharting, that ſo the matters may be the better evacuated by the ſtrait fibers. But the cautery or hot Iron muſt have a three or elſe a four-ſquare point & that ſharp, that ſo it may the more eaſily and ſpeedily enter. Then keeping the pincers immoveable, let him draw through the paſſage made by the cautery a needle thred with a three or four doubled thred of Cotton [or rather a skean of ſilk] moiſtened in the white of an egge and oyl of Roſes; then after you have applyed pledgets dipped in the ſame medicine, bind up the part with a convenient ligature. The day following the neck muſt be anointed with oyl of Roſes, and the pledgets dipped in the former medicine applyed for ſome dayes after. But it will be convenient to moiſten the Seton with a digeſtive made of the yolk of an Egge and oyl of Roſes, untill the ulcer caſt forth much matter; then you ſhall anoint the Cotton thred with this following remedy. ℞ *terebinthinæ ven.* ℥ iiij. *ſyrupi roſat. & abſinthii an.* ℥ ß. *pulveris Ireos, diacrydii, agarici trochiſcati, & Rhei, an.* ℥ ß. *incorporentur omnia ſimul & fiat medicamentum.* Which you ſhall uſe ſo long, as you intend to keep open the ulcer. For it hath a faculty to draw the humors from the face, and cleanſe without biting.

I have found not long ſince by experience, that the apertion made with a long thick Triangular needle of a good length like to a large pack-needle, is leſs painfull than that which is performed with the actuall cautery, which I formerly mentioned. Wherefore I would advice the young Chirurgeon, that he no more uſe the foreſaid actuall cautery. I have here given you the figure of the needle.

*The Figure of a Triangular Needle.*



## CHAP. XXV. *Of Wounds of the Cheek.*

SEeing a wound of the cheek ſeems to require a ſuture, it muſt have a dry ſuture (as they term it) leſt that the ſcar ſhould become deformed. For that deformity is very grievous to many, as to women who are highly pleaſed with their beauties. Therefore you ſhall ſpread two peeces of new cloath of an indifferent fineneſs, and proportionable bigneſs with this inſuing medicine. ℞ *pulveris maſtichini, ſanguinis Draconis, thuris, farinæ volatilis, tragagnthæ contuſæ, gypſi, picis, ſarcocollæ an.* ℥ ij. *picis nigræ* ℥ i ß. *albumina ovorum quæ ſufficiant, fiat medicamentum.* Apply the peeces of cloth ſpread with this on each ſide of the wound one, ſome fingers breadth aſunder, and let it alone till it be hard dryed to the skin. Then you ſhall ſo draw them together with your needle and thred, that the fleſh by their ſticking may alſo follow, and be mutually adjoined, as you may ſee it here expreſt. The wound ſhall be agglutinated by this means, together with the uſe of fit medicines, pledgets, ligatures. But all the ligatures and ſtayes which ſhall be uſed for that purpoſe muſt be faſtened to the Patients night-lap.

The uſe of a dry ſuture.

How to make a dry ſuture.

But when the wound is great and deep, and the lips thereof are much diſtant the one from the other, there can be no uſe of ſuch a dry ſuture. Wherefore you muſt uſe a three or four ſquare needle (that ſo it may the more readily and eaſily enter into the fleſh) being thred with a waxed thred; and with this you muſt thruſt through the lips of the wound, and leave the needle ſticking in the wound, & then wrap the thred to and again over the ends thereof eight or ten times, juſt after that manner which women uſe to faſten a needle with thred in it, upon their ſleeves, or Tailors to their hats or caps, that they may not loſe them.

A Suture fit for hare-lips.

The manner thereof

The needle thus faſtened, ſhall be there untill the perfect agglutination of the wound; this kind of ſuture is uſed in the wounds of the lips, as alſo in hare-lips, for ſo we commonly call lips which are cleft from the firſt conformation in the wombe by the error of the forming faculty. But ſuch a ſuture will help nothing to agglutination, if there lye or remain any skin between the lips of the wound

What hare lips are.

wound; Wherefore you ſhall cut away whatſoever thereof ſhall be there, otherwiſe you muſt expect no union. Other kind of ſutures are of no great uſe in wounds of theſe parts, for out of the neceſſity of eating and ſpeaking, they are in perpetuall motion; wherefore a third would cut the fleſh; for which reaſon you ſhall take up much fleſh with ſuch Needles mentioned in this laſt deſcribed kind of Suture as this following figure ſhewes.

*The figure of the future fit for cloven or hare lips; as alſo the dilineation of the Needle about whoſe ends the thred is wrapped over and under, to and again.*

A Hiſtory.

To this purpoſe I will recite a hiſtory, to the end, that if any ſuch thing happen to come to your hands, you may do the like. A certain Gaſcoin in the battell at Saint *Laurence* had his upper jaw cut overthwart even to his mouth, to the great disfiguring of his face. The wound had many wormes in it and ſtank exceedingly, becauſe he could get no Chirurgeon untill three dayes after he was hurt. Wherefore I waſhed it with a decoction of wormwood, Aloes, and a little *Ægyptiacum*, both to kill the wormes, and to fetch away all the putrid matter; I diſcuſſed the tumor with a diſſolving fomentation and cataplaſm, I joyned together the lips of the wound with the laſt deſcribed ſuture. But I applyed this following medicine to the whole part. ℞ *Terebinth.venet.æ* ℥vj. *gummi elemi.* ℥ij. *pulveris boli armeni, ſan. drac. Maſtiches, myrrhæ, aloes, an.* ʒß. *incorporentur ſimul. fiat medicamentum.* The wound was agglutinated within a few dayes, but that there remained a certain little hole at the joyning of the lower jaw with the upper, wherein you could ſcarſe put the head of the pin; out whereof nevertheleſſe much ſerous and thin moyſture flowed, eſpecially when he either eat or ſpake; which I have alſo obſerved in many others. But for ſtaying of this wateriſh humidity I dropped *Aqua fortis* into the bottome of the ulcer, and divers times put therein a little of the powder of burnt vitriol. Thus by Gods grace he recovered and became whole.

A decoction good to waſh away putrefaction.

A ſmall hole remaining after the cure of great wounds.

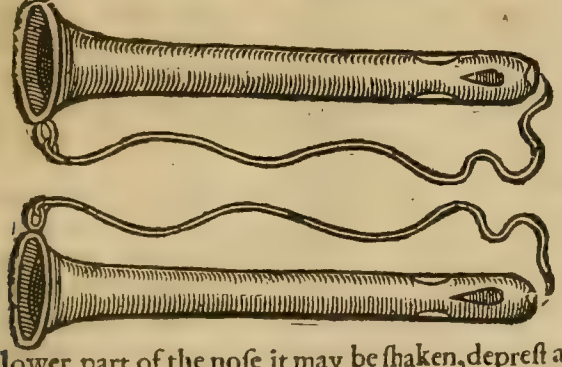
## CHAp. XXVI. *Of the wounds of the Noſe.*

How many wayes the noſe may be hurt.

THe Noſe many wayes ſuffers ſolution of continuity; as by a wound, fracture and contuſion, and it is ſometimes battered & broken on the upper part; which when it happens, you ſhall reſtore the depreſt bones to their native ſeat and figure, with the end of a *ſpatula* or fit ſtick wrapped about with towe, cotton or a linnen rag. Then with pledgets dipped in an aſtringent medicine compoſed *ex albumine ovi, maſtich. bolo armeno, ſanguin. drac. & Alumine uſto*, and applyed to the ſide of the noſe, he ſhall labour to ſtrengthen the reſtored bones, and then bind them with a convenient ligature, which may not preſſe them too much, leſt the noſe ſhould become flat, as it happens to many through the unskilfulneſs of Chirurgeons.

The cure of a broken noſe.

*The Figure of pipes to be put into the Noſtrils.*



The uſe of pipes in broken noſes.

Then muſt you put little pipes into the noſtrills, and theſe not exactly round, but ſomewhat flat and depreſt, tyed to the night-cap on each ſide with a thred, leſt they ſhould fall out. By the help of theſe pipes the bones of the noſe will be kept in their place, and there will be paſſage forth for the matter, and for inſpiration and exſpiration. But if all the noſe, or ſome portion thereof ſhall be wholly cut off, we muſt not hope to reſtore it. But if the Noſe be ſo cut, that as yet it adheres to much of the adjacent fleſh, from whence it may receive life and nouriſhment, then ſow it up. For the lower part of the noſe it may be ſhaken, depreſt and wreſted aſide, ſeeing it is griſtly; but it cannot be broken as the other which is of a bony nature.

## CHAP. XXVII. *Of the Wounds of the Tongue.*

How many wayes the continuity of the tongue may be looſed.

THe tongue may be ſo wounded, that either it may be wholly cut off and deprived of ſome portion of the ſubſtance, or only ſlit long wayes or atwhart. The loſſe of the ſubſtance cannot be repaired, becauſe every part ſeparated and pluckt from the living body, from whence it had life, ſpirit and blood, preſently dyes. For as the Philoſophers ſay, *A privatione ad habitum non eſt regreſſus.* But when it is cut or ſlit longwayes or ſidewayes, it is eaſily reſtored by ſuture, if ſo be that the cloven part yet adhere to the living body from whence it may draw both matter and form of life. Therefore a carefull ſervant ſhall ſtraitly hold with a ſoft and clean linnen cloth the body of the tongue, leſt it ſhould ſlip away by reaſon of its ſlipperineſs, whilſt the Chirurgeon ſtitch it above and below; when he thinks he hath ſufficiently ſowed it, let him cut off the thred as neer to the knot as he can, leſt being left too long it might be tangled with the teeth as he eats, and ſo cauſe a hurtfull laceration or rending of the ſowed parts. In the mean time let the patient eat barly creams, almond milks, Gellyes, culliſſes and broths, and the yolks of egs; and let him often hold in his mouth Sugar of Roſes and ſyrup of Quinces; for ſuch things beſides their nouriſhing faculty, perform the part of an agglutinating and detergent medicine. I have learned theſe things I have here ſet down, neither from my maſters whom I have heard with attention, nor by reading

The cure of a cloven tongue.

of

of books, but they have been such as I have tryed with happy success in many; as in the son of Monsieur *de Marigny* President of the Inquisition, in *Iohn Piet* a Carpenter dwelling in the suburbs of Saint *German*.

But most apparently in a child of three years old, the son of the great Lawyer Monsieur *Covet*, who fell with his chin upon a stone, and so cut off a large peece of the end of his tongue, which chanced to be between his teeth, it hung but at a very small fiber of flesh, so that I had very little or no hope to agglutinate and unite it, which thing almost made me to pluck it quite away; yet I changed that determination by considering the loss of the most noble action of speaking, which would thereupon ensue, and weighing the providence of nature often working wonders and such things as exceed the expectation of the Physitian in curing diseases. I also thought thus with my self, the flesh of the tongue is soft, loose, fungous and spungy, neither is it altogether obvious to the externall injuries of the ayr; wherefore after that I had once or twice thrust through the needle and thred upwards and downwards, and for the rest ordered the child to be used and dieted after the manner I lately mentioned, he grew well within a short time, and yet remains so, speaking well and distinctly.

A History. Nature oft doth strange things in the cure of diseases.

## CHAP. XXVIII. *Of the Wounds of the Eares.*

THe eares are sometimes wholly cut off, sometimes but in part, otherwhiles they are only slit, so that the rent portion as yet adhering to the rest, is joyned with it in communion of life. In this last case it is fit to use a suture; but yet so that you touch not the gristle with your needle; for thence there would be in danger of a gangræne which happens to many by fooliſh curing; therefore you shall take up and comprehend with your needle only the skin, and that little flesh which encompasses the gristle. You shall perform the rest of the cure with pledgets and ligatures artificially fitted, and shall resist inflammation and other symptomes with fit medicins. But you must take speciall care that no superfluous flesh grow in the auditory passage, which may hinder the hearing; wherefore you shall keep that passage free by stopping it with a peece of spunge. But you shall procure agglutination and consolidation of the gristly part (and therefore next to a bone most dry) with dry medicins. But those who have their ears quite cut off, can do nothing but hide the deformity of their mis-hap with a cap, stuffed with cotton on that side.

How many wayes the unity of ears may be violated. How to sow a wounded Eare.

## CHAP. XXIX. *Of the Wounds of the neck and throat.*

THe Wounds of the neck and throat are somewhiles simple, as those which only use the continuity of the muscles; otherwhiles compound, such as those which have conjoyned with them a fracture of the bones, as of the *Vertebræ*, or hurt of the internall and externall jugular Veins, or sleepy Arteries; sometimes the *Trachea Arteria*, or Weazon, and the *œsophagus* or gullet are wounded; sometimes wholly cut off, whence present death ensues. Wherefore let not the Chirurgeon meddle with such wounds, unless he first foretell the danger of death, or the loss of some motion to those that are present. For it often happens that some notable nerve or tendon is violated by a wound in the neck, whence a palsie ensues, and that absolutely incurable, if the wound shall penetrate to the spinall marrow, also hurt therewith. Wounds of the gullet and Weazon are difficultly cured because they are in perpetuall motion; and chiefly of the latter by reason it is gristly and without blood. The wounds of the gullet are known, by spitting of blood, by the breaking forth of meat & drink by the wound; but if the gullet be quite cut asunder, the patient cannot swallow at all. For the cut parts are both contracted in themselves, the one upwards, and the other downwards. But we know the weazon is hurt, by casting up blood at the mouth with a continuall cough, and by the coming forth of the breath or winde by the Wound. The Wounds of the jugular Veins and sleepy Arteries, if they be great, are usually deadly, because they cannot be straitly bound up; for you cannot bind the throat hard without danger of choaking or strangling the patient. But for defect of a strait ligature in this case the flux of blood proves deadly. If the recurrent Nerve of either side be cut, it makes the voice hoarse; if cut on both sides, it takes away the use of speech, by hurting these instruments which impart motion to the muscles of the *Larinx*. For the cure if the wound be small, and not associated with the hurt of any notable vessel, nor of the Weazon and gullet, it is speedily and easily cured; and if there shall be need you shall use a suture, then you shall put therein a sufficient quantity of Venice Turpentine mixed with bole-Armenick; or else some of my Balsam of which this is the receipt. ℞ *Terebinth. venetæ* ℔ *ß. gum. elemi* ℥iiij. *olei hypericonis* ℥iij. *boli armeni, & sang. draconis an.* ℥j. *aqua vitæ* ℥ij. *liquefiant simul omnia lento igne, & fiat Balsamum ut artis est, addendo pulveris ireos florent. aloes, Mastiches, myrrhæ an.* ℥j. I have done wonders with this Balsame in the agglutination of simple wounds, wherein no strange body hath been. Now when you have put it in, lay upon it a plaister of *Diacalcitheos* dissolved in oyl of Roses & vinegar, as that which hath power to repress the flowing down of humors, and hinder inflammation, or in stead thereof you may apply *Emp: de Gratia Dei*, or *Emp. de Ianua*. But if the jugular veins and sleepy Arteries be cut, let the bleeding be stayed, as we have shewed in a chapter, treating thereof. When the Weazon or Gullet are wounded, the Chirurgeon shall sow them up as neatly as he can; and the Patient shall not endeavour to swallow any hard thing, but be content to be fed with gellyes and broths. When a gargarisme is needfull, this following is very good. ℞ *hordei M. j. florum rosar. p. j. passul. mund. jujubarum an.* ℥ß. *glycyrhizæ* ℥j. *bulliant omnia simul, addendo mellis ros. & Iulep. ros. an.* ℥ij. *fiat gargarisma, ut artis est.*

With which being warm the Patient shall moysten his mouth, and throat, for it will mitigate the harshnes of the part, assuage pain, cleanse and agglutinate, and make him breath more freely. But that the Chirurgeon may not despaire of, or leave any thing unattempted in such like wounds, I have thought good to demonstrate by some examples how wonderfull the works of nature are, if they be assisted by Art.

The differences of wounds of the neck & throat. The palsie followes upon wounds of the neck. Signes that the gullet is wounded. The wounds of the jugular veins and sleepy Arteries are deadly by accident. By hurting the recurrent Nerve the voice is hurt. The description of the Authors Balsam. The faculty of *Diacalcitheos*. The cure of the wounded Weazon and gullet. A gargarism. The manifold use thereof.

A History. A certain servant of Monsieur *de Champaigne*, a gentleman of *Anjou*, was wounded in the throat with a sword, whereby one of the jugular veins was cut together with his Weazon. He bled much and could not speak, and these symptomes remained, untill such time as the wound was sowed up, and covered with medicines. But if the medicins at any time were more liquid, he as it were sucked them by the wound and spaces between the stitches, and presently put forth at his mouth that which he had sucked or drawn in. Wherefore more exactly considering with my self, the greatness of the Wound, the spermatick, and therefore dry and bloodless nature unapt to agglutination, of the affected part, but chiefly of the Weazon and jugular vein; as also for that the rough Artery is obnoxious to these motions which the gullet performs in swallowing, by reason of the inner coat, which is continued to the coat of the gullet, by which means these parts mutually serve each other with a reciprocall motion, even as the ropes which run to the wheel of a pulley; furthermore weighing that the Artery was necessary for the breathing, and tempering the heat of the heart, as the jugular veins served for the nourishment of the upper parts; and lastly weighing with my self the great quantity of blood he had lost, which is as it were the treasure of nature, I told those which were present, that death was neer and certainly at hand. And yet beyond expectation, rather by divine favour then our Art, he recovered his health.

A strange History. Equally admirable is this history following, Two Englishmen walked out of the City of *Paris* for their recreation to the wood of *Vincenne*; but one of them lying in wait to rob the other of his money and a massie chain of gold which he wore set upon him at unawares, cut his throat and robbed him, and so left him amongst the Vines which were in the way, supposing he had kill'd him, having with his dagger cut the Weazon and gullet. This murderer came back to the city; the other half dead, crawled with much adoe to a certain Peasants house, and being dressed with such medicines as were present and at hand, he was brought to the City, and by his acquaintance committed to my cure to be cured. I at the first, as diligently as I could, sowed up the Weazon which was cut quite asunder, and put the lips of the wound as close together as I could; I could not get hold of the gullet because it was fallen down into the stomach, then I bound up the wound with medicins, pledgets and fit ligatures. After he was thus dresst he begun to speak, and tell the name of the villain the author of this fact, so that he was taken and fastened to the wheel, and having his limbs broken lost his wretched life, for the life of the innocent wounded man who dyed the fourth day after he was hurt.

Another History. The like hurt befell a certain Germane, who lay at the house of one *Perots* in the street of Nuts; he being frantick, in the night cut his throat with a sword: I being called in the morning by his friends who went to see him, dresst him just after the same manner as I dressed the Englishman. Wherefore he presently recovered his speech, which before could not utter one syllable, freed from suspition of the crime and prison the servant, who lying in the same chamber with him, was upon suspition committed to prison, and confessing the thing as it was done, lived foure dayes after the wound being nourished with broths put into his fundament like clysters, and with the gratefull vapour of comfortable things, as bread newly drawn out of the Oven and soaked in strong wine. Having thus by Art of Chirurgery made the dumb speak for the space of foure dayes.

## CHAP. XXX. *Of the Wounds of the Chest.*

The differences of wounds of the Chest. SOme wounds of the Chest are on the fore side, some behind, some penetrate more deep, others enter not into the capacity thereof, other some pierce even to the parts contained therein, as the *Mediastinum*, Lungs, heart, midriffe, hollow vein, and ascendent artery; Other some passe quite through the body; whereby it happens that some are deadly, some not.

The signes. You shall thus know that the wound penetrates into the capacity of the Chest, if that when the patients mouth and nose be shut, the breath, or wind breaks through the wound with noise, so that it may dissipate, or blow out a lighted candle being held neer it. If the patient can scarse either draw, or put forth his breath, which also is a signe that there is some blood fallen down upon the *Diaphragma*.

Signes that the heart is wounded. By these signes you may know that the heart is wounded: If a great quantity of blood gush out, if a trembling possesse all the members of the body; if the pulse be little and faint, if the colour become pale, if a cold sweat and frequent sowning assail him, and the extream parts become cold, then death's at hand.

A History. Yet when I was at *Turin* I saw a certain Gentleman who fighting a duell with another, received a wound under his left brest which pierced into the substance of his heart, yet for all that he struck some blowes afterwards, and followed his flying enemy some two hundred paces untill he fell down dead upon the ground; having opened his body, I found a wound in the substance of the heart, so large as would contain ones finger; there was only much blood poured forth upon the midriffe.

Signes that the Lungs are wounded. These are the signes that the Lungs are wounded, for the blood comes foamy or frothy out of the wounds, the Patient is troubled with a cough, he is also troubled with a great difficulty of breathing and a pain in his side, which he formerly had not; he lyes most at ease when he lyes upon the wound, and sometimes it comes so to pass, that lying so he speaks more freely and easily, but turned on the contrary side, he presently cannot speak.

Signes that the midriffe is wounded. When the *Diaphragma*, or midriffe is wounded, the party affected is troubled with a weight or heavinesse in that place, he is taken with a *Delirium*, or raving by reason of the sympathy of the Nerves of the sixth conjugation which are spread over the midriffe; difficulty of breathing, a cough & sharp pain troubles the patient, the Guts are drawn upwards; so that it sometimes happens by the vehe-

vehemency of breathing, that the ſtomach and guts are drawn through the wound into the capacity of the Cheſt; which thing I obſerved in two.

The one of theſe was a Maſon, who was thruſt through the midſt of the midriffe, where it is nervous, and dyed the third day following. I opening his lower belly, and not finding his ſtomach, thought it a monſtrous thing; but at length ſearching diligently, I found it was drawn into the Cheſt, through the wound which was ſcarſe an inch broad. But the ſtomach was full of wind, but little humidity in it. A Hiſtory.

The other was called captain *Francis d'Alon* a Native of *Xantoigne*, who before *Rochell* was ſhot with a Musket Bullet, entring by the breaſt-bone neer to the ſword-like Griſtle, and paſſing through the fleſhy part of the midriffe, went out at the ſpace between the fifth and ſixth baſtard ribs. The wound was healed up on the out ſide, yet for all that there remained a weakneſs of the ſtomach, whereupon a pain of the guts like to the colick took him, eſpecially in the Evening, and on the night; for which cauſe he durſt not ſup but very ſparingly. But on the eighth month after, the pain raging more violently in his belly then it was accuſtomed, he dyed; though for the mitigating of the vehemency thereof *Simon Malmedy* and *Anthony du Val* both learned Phyſitians omitted no kind of remedy. The body of the diſeaſed was opened by the skilfull Chirurgeon *James Guillemeau*, who found a great portion of the colick gut ſwelled with much wind gotten into the Cheſt, through the wound of the *Diaphragma*, for all it was ſo ſmall that you could ſcarſe put your little finger in thereat. But now let us return from whence we digreſſed. Another Hiſtory.

We underſtand that there is blood poured forth into the capacity of the Cheſt by the difficulty of breathing, the vehemency of the increaſing feaver, the ſtinking of the breath, the caſting up of blood at the mouth, and other ſymptomes which uſually happen to theſe who have putrefied and clotted blood poured out of the veſſels into the belly, infecting with the filthy vapour of the corrupt ſubſtance, the parts to which it ſhall come. But alſo, unleſs the Patient cannot lye upon his back, he is troubled with a deſire to vomit, and covets now and then to riſe, whence he often falls into a ſwound, the vitall faculty which ſuſtains the body being broken and debilitated both by reaſon of the wound, and concreat or clotted blood; for ſo putting on the quality of poyſon, it greatly diſſipates and diſſolves the ſtrength of the heart. Signs that there is blood poured into the capacity of the Cheſt.

It is a ſign the ſpinall marrow is hurt, when a Convulſion or Palſie, that is, a ſodain loſs of ſenſe and motion in the parts thereunder, an unvoluntary excretion of the Urine and other excrements, or a totall ſuppreſſion of them, ſeiſes upon the Patient. When the hollow vein and great Artery are wounded, the Patient will dye in a ſhort time, by reaſon of the ſodain and aboundant effuſion of the blood and ſpirits, which intercepts the motion of the Lungs and heart, whence the party dyes ſuffocated. Signs that the ſpine is wounded.

## CHAP. XXX. *Of the cure of the Wounds of the Cheſt.*

WE have read in *John de Vigo*, that it is diſputed amongſt Chirurgeons concerning the conſolidation of wounds of the Cheſt. For ſome think that ſuch wounds muſt be cloſed up, and cicatrized with all poſſible ſpeed, leſt the cold air come to the heart, and the vitall ſpirits fly away and be diſſipated. Others on the contrary think that ſuch wounds ought to be long kept open; and alſo if they be not ſufficiently large of themſelves, that then they muſt be inlarged by Chirurgery, that ſo the blood poured forth into the capacity of the Cheſt may have paſſage forth, the which otherwiſe by delay would putrefie, whence would enſue an increaſe of the feaver, a fiſtulous ulcer, and other pernicious accidents. The firſt opinion is grounded upon reaſon and truth, if ſo be that there is little or no blood poured forth into the capacity of the Cheſt; But the latter takes place where there is much more blood contained in the empty ſpaces of the Cheſt. Which, leſt I may ſeem raſhly to determin, I think it not amiſs to ratifie each opinion with a hiſtory thereto agreeable. *Vigo tract. de vuln. thorac. cap. 10.*

Whilſt I was at *Turin*, Chirurgeon to the Marſhall of *Montejan*, the King of *France* his Generall, I had in cure a Souldier of *Paris*, whoſe name was *Leveſque*, he ſerved under captain *Renovart*. He had three wounds, but one more grievous than the reſt, went under the right breſt, ſomewhat deep into the capacity of the Cheſt, whence much blood was poured forth upon the midriffe, which cauſed ſuch difficulty of breathing, that it even took away the liberty of his ſpeech; beſides through this occaſion he had a vehement feaver, coughed up blood, and a ſharp pain on the wounded ſide. The Chirurgeon which firſt dreſt him, had ſo bound up the wound with a ſtrait and thick ſuture, that nothing could flow out thereat. But I being called the day after, and weighing the preſent ſymptomes which threatned ſpeedy death, judged that the ſowing of the wound muſt ſtraight be looſed; which being done there inſtantly appeared a clot of blood at the orifice thereof, which made me to cauſe the Patient to lye half out of his bed, with his head downwards, and to ſtay his hands on a ſettle which was lower than the bed, and keeping himſelf in this poſture, to ſhut his mouth and noſe that ſo his Lungs ſhould ſwell, the midriffe be ſtretched forth, and the intercoſtall muſcles and thoſe of the *Abdomen* ſhould be compreſſed, that the blood poured into the Cheſt might be evacuated by the wound; but alſo that this excretion might ſucceed more happily, I thruſt my finger ſomewhat deep into the wound, that ſo I might open the orifice thereof being ſtopped up with the congealed blood; and certainly I drew out ſome ſeven or eight ounces of putrefied & ſtinking blood by this means. When he was laid in his bed, I cauſed frequent injections to be made into the wound of a decoction of Barly with Honey of Roſes and red Sugar, which being injected I wiſht him to turn firſt on the one, and then on the other ſide, and then, again to lye out of his bed as before: for thus he evacuated ſmal, but very many clots of blood, together with the liquor lately injected; which being done, the ſymptomes were mitigated, & left him by little and little. The next day I made another more detergent injection, adding thereto wormwood, centaury, and Aloes; but ſuch a bitternes did riſe up to his mouth together with a deſire to caſt, that he could not longer indure it. Then it came into my mind that formerly I had obſerved the like effect of the like remedy in the Hoſpitall A Hiſtory. Why bitter things muſt not be caſt into the Cheſt.

ſpitall of *Paris*, in one who had a fiſtulous ulcer in his Cheſt. Therefore when I had conſidered with my ſelf that ſuch bitter things may eaſily paſs into the Lungs, and ſo may from thence riſe into the Weazon and mouth, I determined that thence forwards I would never uſe ſuch bitter things to my Patients, for the uſe of them is much more troubleſome than any way good and advantagious. But at the length this Patient by this and the like means recovered his health beyond my expectation.

Read the Hiſtory of *Marylus* in *Galen. lib. 7. de Anatom. adminiſtra.*

But on the contrary, I was called on a time to a certain *Germain* gentleman who was run with a ſword into the capacity of his Cheſt, the neighbouring Chirurgeon had put a great tent into the wound at the firſt dreſſing, which I made to be taken forth, for that I certainly underſtood there was no blood powred forth into the capacity of the Cheſt becauſe the Patient had no feaver, no weight upon the *Diaphragma*, nor ſpitted forth any blood. Wherefore I cured him in few dayes by only dropping in ſome of my balſame and laying a plaiſter of *Diacalcitheos* upon the wound. The like cure I have happily performed in many others. To conclude, this I dare boldly affirm, that wounds of the Cheſt by the too long uſe of tents degenerate into Fiſtula's. Wherefore if you at any time ſhall undertake the cure of wounds which penetrate into the capacity of the Cheſt, you ſhall not preſently ſhut them up at the firſt dreſſing, but keep them open for two or three dayes; but when you ſhall find that the Patient is troubled with none or very little pain, and that the midriffe is preſſed down with no weight, and that he breaths freely, then let the tent be taken forth, and the wound healed up as ſpeedily as you can by covering it only with lint dipped in ſome balſame which hath a glutinative faculty, and laid ſomewhat broader than the wound; never apply linimeuts to wounds of this kind, leſt the Patient by breathing draw them into the capacity of the Cheſt. Wherefore alſo you muſt have a care that the tent put into thoſe kinds of wounds may be faſtened to the pledgets, and alſo have ſomewhat a large head, leſt they ſhould be drawn as we ſaid into the capacity of the Cheſt, for if they fall in, they will cauſe putrefaction and death. Let *Emplaſt. Decalcitheos* or ſome ſuch like be applyed to the wound. But if on the contrary, you know by proper, and certain ſigns, that there is much blood fallen into the ſpaces of the Cheſt, then let the orifice of the wound be kept open with larger tents, untill all the *Sanies* or bloody matter, wherein the blood hath degenerated, ſhall be exhauſted. But if it happen at any time, as aſſuredly it ſometimes doth, that notwithſtanding the Art and care of the Phyſitian, the wound degenerates into a *Fiſtula*, then the former evill is become much worſe. For *Fiſtula's* of the Cheſt, are ſcarſe cured at any time, and that for divers cauſes. The firſt is, for that the muſcles of the Cheſt are in perpetuall motion; Auother is, becauſe they on the contrary inſide are covered only with the membrane inveſting the ribs, which is without blood. The third is, for that the wound hath no ſtay, by means whereof it may be compreſſed, ſowed, and bound, whereby the lips being joyned together, the wound may at length be repleniſhed with fleſh and cicatrized.

What harm enſues the too long uſe of tents.

No liniments muſt be uſed in wounds of the Cheſt.

Wounds of the Cheſt eaſily degenerate into a *Fiſtula*.

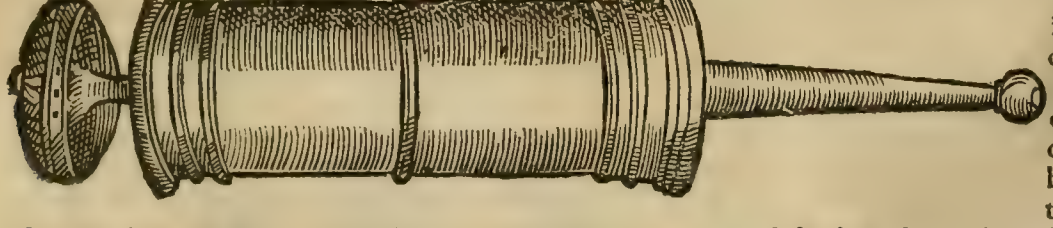
But the reaſon why wounds of the Cheſt do every day heap up and pour forth ſo great a quantity of matter, ſeems to be their vicinity to the heart, which being the fountain of blood, there is a perpetuall efflux thereof from thence to the part affected. For this is natures care in preſerving the affected parts, that continually and aboundantly without meaſure or mean it ſends all its ſupplyes, that is, blood and ſpirits to the aid. Add hereto, that the affected parts by pain, heat, and continuall motion of the Lungs and midriffe, draw and allure much blood to themſelves. Such like blood defiled by the malignity and filth of the wound, is ſpeedily corrupted; whence it is that from the perpetuall afflu of blood, there is a continuall efflux of matter or filth, which at the laſt brings a man to a conſumtion; becauſe the ulcerated part like a ravenous wolf conſumes more blood by the pain, heat and motion than can be miniſtred thereto by the heart. Yet if there be any hope to cure and heal the *Fiſtula*, it ſhall be performed, (after the uſe of diet, phlebotomy, and according to the preſcript of the Phyſitian) by a vulnerary potion, which you ſhall find deſcribed when we treat of the *Caries* or rottenneſs of the bones. Wherefore you ſhall make frequent injections therewith into the *Fiſtula*, adding and mixing with it *ſyrupus de roſis ſiccis* and *mel roſarum*. Neither do I, if the putrefaction be great, fear to mix therewith *Ægyptiacum*. But you muſt have a care to remember & obſerve the quantity of the injected liquor, that you may know whether it all come forth again after it hath performed its detergent office. For if any thereof remain behind in the corners and crooked paſſages, it hurts the part, as corrupted with the contagion thereof,

VVhy there flows ſuch plenty of matter out of wounds of the Cheſt.

The cure of a *Fiſtula* in the Cheſt.

VVhen *Ægyptiacum* muſt be put into the injections.

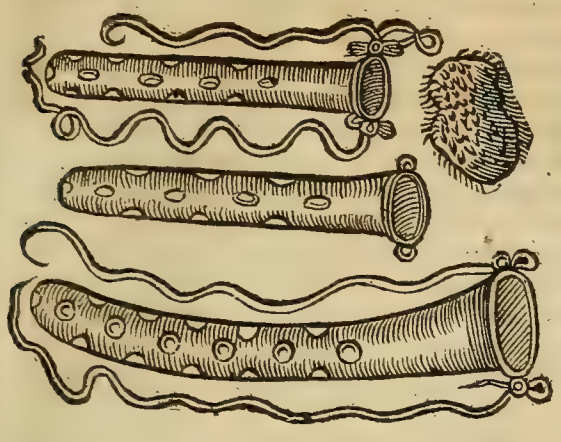
*The form of a Syringe fit to make injection, when a great quantity of liquor is to be injected into any part.*



After the injected liquor is come forth, a pipe of gold, ſilver or lead, ſhall be put into the fiſtulous ulcer; and it muſt have many holes in it, that ſo the filth may paſs forth at them; it muſt be faſt tyed with ſtrings, that it may not fall into the capacity of the Cheſt. A great ſpunge ſteeped in *aqua vitæ*, and wrung forth again, ſhall be laid hot to the end or orifice thereof, both to hinder the entrance of the air into the Fiſtulous ulcer, as alſo to draw forth the filth there by its gentle heat, the which thing the Patient ſhall much further if often times both day and night he hold his breath, ſtopping his mouth and noſe, and lying upon the diſeaſed ſide, that ſo the *Sanies* may be the more forcibly evacuated; neither muſt we leave the putting in the pipe, before that this fiſtulous ulcer ſhall be almoſt dry, that is, whole, as when it yeelds little, or no matter at all; then it muſt be cicatrized. But if the orifice of this fiſtulous ulcer being in the upper part hinder the healing thereof, then by a chirurgicall Section, a paſſage ſhall be made in the bottome, as we ſaid before in an *Empyema*.

The

*The delineation of the pipes with their strings and spunges.*



*The Reader must note that the pipes which are fit for this use, need not have so many holes as these here expresst; but only two or three in their ends: for the flesh growing and getting into the rest, make them that they cannot be plucked forth without much pain.*

A wound made in the Lungs admits cure, unless it be very large, if it be without inflammation; if it be on the skirts of the Lungs, and not on their upper parts; if the Patient contain himself from coughing much, and contentious speaking, and great breathing: for the wound is inlarged by coughing, and thence also arises inflammation; the *Pus* and *Sanies* whereof, whilst the lungs again indeavour to expell by coughing, by which means they are only able to expell that which is hurtfull and troublesome to them, the ulcer is dilated, the inflammation augmented, the Patient wastes away, and the disease becomes incurable. *What wounds of the Lungs are curable.* *The harm that insues upon coughing in wounds of the Lungs.*

There have bin many *Eclegma's* described by Physitians for to clense the ulcer; which when the Patient useth, he shall lye on his back, to keep them long in his mouth, so to relax the muscles of the *Larinx*; for thus the medicine will fall by little and little alongst the coats of the weazon, for if it should fall down in geeat quantity, it would be in danger to cause coughing. Cows, Asses, or Goats milk with a little hony, lest they should corrupt in the stomach, are very fit remedies for this purpose; but womans milk exceeds the rest. *How Eclegma's must be swallowed.*

But Sugar of Roses is to be preferred before all other medicines, in the opinion of *Avicen*, for that it hath a detergent, and also an astrictive and strengthening faculty, than which nothing is more to be desired in curing of ulcers. When you shall think it time to agglutinate the clensed ulcer, you must command the Patient to use emplastick, austere, and astringent medicines, such as are *Terra sigillata*, *bolus armenus*, *hypocystis*, plantain, knot-grass, *Sumach*, *acacia* and the like, which the Patient shall use in his broaths and *Eclegma's*, mixing therewith honey of roses, which serving for a vehicle to the rest, may carry away the impacted filth which hinders agglutination. But seeing an hective feaver easily follows upon these kinds of wounds, and also upon the affects of the Chest and lungs, it will not be amiss to set down somewhat concerning the cure thereof, that so the Chirurgeon may know to administer some help to his Patient, whilst a Physitian is sent for, to overcome this disease with more powerfull and certain remedies. *The utility of Sugar of roses in ulcerated or wounded Lungs.*

## CHAP. XXXII. *Of the differences, causes, signs and cure of an Hective Feaver.*

AN Hective feaver is so called, either for that it is stubborn and hard to cure and loose, as things which have contracted a habit; for *Hexis* in Greek signifies a habit; or else for that it seises upon the solid parts of our bodies called by the Greeks *Hexeis*; both which the Latin word *Habitus* doth signifie. *The reason of the name.*

There are three kinds, or rather degrees of this feaver. The first is when the hectick heat consumes the humidity of the solid parts. The second is, when it feeds upon the fleshy substance. The third and uncurable is, when it destroyes the solid parts themselves. For thus the flame of a lamp first wastes the oyl, then the proper moisture of the weik. Which being done there is no hope of lighting it again what store of oyl soever you poure upon it. This feaver very seldome breeds of it self, but commonly follows after some other. *The differences thereof.*

Wherefore the causes of a hective feaver are, sharp and burning feavers not well cured, especially if their heat were not represst with cooling epithemes applyed to the heart and *Hypochondria*. If cold water was not fitly drunk. It may also succeed a Diary feaver which hath been caused and begun by some long, great, and vehement grief or anger, or some too violent labour, which any of a slender and dry body hath performed in the hot sun. It is also oft-times caused by an ulcer or inflammation of the Lungs, an *empyema* of the Chest, by any great and long continuing *Phlegmon* of the Liver, stomach, mesentery, wombe, kidneys, Bladder, of the guts *Iejunum* and *Colon*, and also of the other Guts, if the *Phlegmon* succeed some long *Diarrhœa*, *Lienteria* or bloody flux, whence a consumption of the whole body, and at last a hectick feaver, the heat becoming more acrid, the moisture of the body being consumed. *The causes.*

This kind of feaver as it is most easily to be known, so is it most difficult to cure; the pulse in this feaver is hard, by reason of the dryness of the Artery which is a solid part; and it is weak by reason of the debility of the vitall faculty, the substance of the heart being assaulted. But it is little and frequent because of the distemper and heat of the heart, which for that it cannot by reason of its weakness cause a great pulse to cool it self, it labours by the oftenness to supply that defect. *The Signs.*

But for the pulse, it is a proper sign of this feaver, that one or two houres after meat the pulse feels stronger than usuall; and then also there is a more acrid heat over all the Patients body. The heat of this flame lasts untill the nourishment be distributed over all the Patients body; in which time the dryness of the heart in some sort tempered and recreated by the appulse of moist nourishment, the heat increases no otherwise than lime which a little before seemed cold to the touch, but sprinkled and moistened with water grows so hot, as it smoaks and boyls up. At other times there is a perpetuall equality of heat & pulse in smalness, faintness, obscurity, frequency, and hardness, without any exacerbation, so that the Patient cannot think himself to have a feaver, yea he cannot complain of any thing, he feels no pain, which is another proper sign of an hectick feaver. The cause that the heat doth not *Why in hectics the heat is more acrid after meat.*

shew

The signes of a hectick joyned with a putrid feaver.

shew its self is, it doth not possesse the surface of the body, that is, the spirits and humors, but lyes as buried in the earthy grosnesse of the solid parts. Yet if you hold your hand somewhat long, you shal at last perceive the heat more acrid and biting, the way being opened thereto by the skin rarifyed by the gentle touch of the warm and temperate hand. Wherefore if at any time in these kind of feavers the Patient feel any pain, and perceive himself troubled with an inequality and excesse of heat, it is a sign that the hectick feaver is not simple, but conjoined with a putrid feaver, which causeth such inequality, as the heat doth more or lesse seise upon matter subject to putrefaction; for a hectick feaver of it self is void of all equality, unlesse it proceed from some externall cause, as from meat; Certainly if an Hippocratique face may be found in any disease, it may in this, by reason of the colliquation, or wasting away the triple substance. In the cure of this disease, you must diligently observe with what affects it is entangled, and whence it was caused. Wherefore first you must know whether this feaver be a disease; or else a symptome. For if it be symptomaticall, it cannot be cured, as long as the disease the cause thereof, remains uncured; as if an ulcer of the guts occasioned by a bloody flix shall have caused it, or else a fistulous ulcer in the Chest caused by some wound received on that part, it will never admit of cure, unlesse first the fistulous or dysenterick ulcer shall be cured; because the disease feeds the symptomes, as the cause the effect. But if it be a simple and essentiall hectick feaver, for that it hath its essence consisting in an hot and dry distemper, which is not fixed in the humors, but in the solid parts, all the counsell of the Physitian must be to renue the body, but not to purge it; for only the humors require purging, and not the defaults of the solid parts. Therefore the solid parts must be refrigerated and humected; which we may doe by medicins taken inwardly and applyed outwardly.

The cure.

A symptomaticall hectick.

An essentiall hectick.

Things to be taken inwardly.

The things which may with good success be taken inwardly into the body for this purpose, are medicinall nourishments. For hence we shall find more certain and manifest good, than from altering medicins, that is, wholly refrigerating and humecting without any manner of nourishment.

The benefit of medicinall nourishments.

For by reason of that portion fit for nutriment which is therewith mixed they are drawn and caried more powerfully to the parts, and also converted into their substance: whereby it comes to passe that they do not humect and coole them lightly and superficially, like the medicins which have only power to alter and change the body, but they carry their qualities more throughly even into the innermost substance. Of these things some are herbs, as violets, purslain, bugloss, endive, duckes-meat, or water lentill, mallowes, especially when the belly shall be bound. Some are fruits, as gourds, cowcumbers, apples, prunes, raisons, sweet almonds, and fresh or new pine-apple kernells; in the number of seeds are the foure greater and lesser cold seeds, and these new, for their native humidity, the seeds of poppyes, berberies, quinces. The flowers of bugloss, violets, water lillies, are also convenient; of all these things let broth be made with a chicken, to be taken in the morning for eight or nine dayes, after the first concoction.

The choice of meats.

For meats; in the beginning of the disease, when the faculties are not too much debilitated, he shall use such as nourish much and long, though of hard digestion; such as the extream parts of beasts, as the feet of Calves, Hogs feet not salted, the flesh of a Tortois, which hath lived so long in a garden, as may suffice to digest the excrementitious humidity; the flesh of white Snails, and such as have been gathered in a vineyard, of frogs, river Crabs, Eels taken in clear waters, and well cooked, hard egs eaten with the juyce of Sorrell without spices; Whitings and stockfish. For all such things because they have a tough and glutinous juice, are easily put and glutinated to the parts of our body, neither are they so easily dissipated by the feaverish heat. But when the patient languisheth of a long hectick, he must feed upon meats of easie digestion, and these boyled rather than roasted; for boyled meats humect more, & roasted more easily turn into choler. Wherefore he may use to eat Veal, Kid, Capon, Pullet, boiled with refrigerating and humecting hearbs; he may also use Barly creams, Almond milks, as also bread crummed and moistened with rose water and boyled in a decoction of the foure cold seeds with sugar of roses; for such a Panada cools the liver, and the habit of the whole body, & nourisheth withall. The Testicles, wings, and livers of young cocks, as also figs and raisons. But if the Patient at length begin to loath and grow weary of boyled meats, then let him use roast, but so that he cut away the burnt & dryed part thereof, and feed only on the inner part thereof, & that moistned in rose water, the juice of Citrons, Oranges or Pomegranats. Let him abstain from salt and dry fishes, and chuse such fishes as live in stony waters, for the exercise they are forc'd to undergoe in shunning the rocks beaten upon by the waves. Asses milk newly milked and seasoned with a little salt, sugar, honey, or fennell, that it may not corrupt, nor grow sowre in the stomach; or womans milk sucked from the dug by the Patient, to the quantity of halfe a pint, is much commended; verily womans milk is the more wholsome, as that which is more sweet and familiar to our substance, if so be that the nurse be of a good temper and habit of body. For so it is very good against the gnawings of the stomach, and ulcers of the Lungs, from whence a Consumption often proceeds. Let your milch Asse be fed with barly, oats, oakleaves; but if the Patient chance to be troubled with the flux of the belly, you shall make the milk somewhat astringent by gently boiling it, and quenching therein pebble stones heated red hot. But for that all natures cannot away with Asses milk, such shall abstain from it, as it makes to have acrid belchings, difficulty of breathing, a heat and rumbling in the *Hypochondria*, and pain of the head. Let the Patient temper his wine with a little of the waters of Letruce, purslain and water-lillies, but with much bugloss water, both for that it moystens very much, as also for that it hath a specifick power to recreate the heart, whose solid substance in this kind of disease is grievously afflicted. And thus much of things to be taken inwardly.

How Asses milk must be used in a hectick.

VVomans milk more wholsome than Asses.

Things to be outwardly applyed.

These things which are to be outwardly applyed, are inunctuous, baths, epithemes, clysters. Inunctions are divers, according to the various indication of the parts whereto they are applyed. For *Galen* anoints all the spine with cooling and moderate astringent things, as which may suffice to strengthen

then the parts,and hinder their wasting,& not let the transpiration;for if it should be letted, the heat would become more acrid,by suppressing the vapours.Oyl of roses, water lillies, Quinces, the mucilages of Gum tragacanth and arabick extracted into water of nightshade, with some small quantity of camphire,and a little wax if need require;but on the contrary, the parts of the breast must be annointed with refrigerating and relaxing things;by refrigerating I mean things which moderately cool,for cold is hurtfull to the breast. But astringent things would hinder the motion of the muscles of the chest,and cause a difficulty of breathing. Such inunctions may be made of oyl of Violets, willowes, of the seeds of lettuce,poppies,water-lillies, mixing with them the oyl of sweet almonds to temper the astriction which they may have by their coldness. But you must have great care that the Apothecary for covetousness in stead of these oyls newly made give you not old, rancid and salted oyls, for so in stead of refrigerating,you shall heat the part;for wine,honey and oyl acquire more heat by age; in defect of convenient oyls,we may use butter well washed in violet and nightshade water.The use of such inunctions,is to cool,humect and comfort the parts whereto they are used; they must be used evening and morning,chiefly after a bath.

A caution in the choice of Oyles.

Now for Baths,we prescribe them either only to moisten, and then plain warm water wherein the flowers of Violets and water lillies, willow leaves and barly have beed boyled, will be sufficient; or else not only to moisten,but also to acquire them a fairer and fuller habit, and then you may adde to your bath the decoction of a sheeps head and Gather,with some butter. But the Patient shall not enter into the bath fasting, but after the first concoction of the stomach, that so the nourishment may be drawn by the warmness of the bath into the whole habit of the body, for otherwise he which is sick of a consumption and shall enter the bath with his stomach empty, shall suffer a greater dissipation of the triple substance,by the heat of the bath, then his strength is well able to endure.Wherefore it is fit thus to prepare the body, before you put it into the bath.The day before in the morning let him take an emollient clyster, to evacuate the excrements baked in the guts by the hectick dryness; then let him eat to his dinner some solid meats about nine of the clock; and let him about foure of the clock eat somewhat sparingly,meats of easie digestion to his supper. A little after midnight let him sup off some chicken broth or barly cream,or else two rear egs tempered with some rose water and sugar of roses in stead of salt.Some 4 or 5 houres after,let him enter into the bath,these things which I have set down, being observed.When he comes out of the bath, let him be dryed and gently rubbed, with soft linnen cloaths,and anointed as I formerly prescribed, then let him sleep if he can for two or three houres in his bed:when he wakes let him take some Ptisan,or some such like thing, and then repeat his bath after the foresaid manner.He shall use this bath thrice in ten dayes;But if the Patient be subject to crudities of the stomach,so that he cannot sit in the bath without fear of sowning and such symptomes,his stomach must be strengthned with oyl of Quinces,Wormwood and mastich,or else with a crust of bread tosted,and steeped in muskadine,and strewed over with the powders of Roses, Sanders, and so laid to the stomach,or behind neer to the thirteenth *vertebra* of the back,under which place,Anatomy teaches, that the mouth of the stomach lyes. Epithemes shall be applyed to the liver and heart, to temper the too acrid heat of these parts,and correct the immoderate dryness by their moderate humidity. Now they shall be made of refrigerating and humecting things,but chiefly humecting; for too great coldness would hinder the penetration of the humidity into the part lying within. The waters of bugloss,and Violets,of each a quartern with a little white wine is convenient for this purpose.But that which is made of French barly,the seeds of gourds, pompions, or Cowcumbers of each three drams in the decoction,and mixed with much tempering with oyl of Violets, or of sweet almonds,is most excellent of all other.Let cloaths be dipped and steeped in such epithemes, and laid upon the part, and renued as oft as they become hot by the heat of the part.And because in hectick bodies,by reason of the weakness of the digestive faculty,many excrements are usually heaped up, and dryed in the guts, it will be convenient,all the time of the disease to use frequently clysters made of the decoction of cooling and humecting herbs,flowers,and seeds wherein you shall dissolve *Cassia* with sugar and oyl of Violets, or water-lillies.But because there often happen very dangerous fluxes in a confirmed hectick feaver, which shew the decay of all the faculties of the body, and wasting of the corporeall substance, you shall resist them with refrigerating and assisting medicins; and meats of grosser nourishment, as Rice, and Cicers; and application of astringent and strengthening remedies; and using the decoction of Oats or parched barly for drink.Let the Patient be kept quiet and sleeping as much as may be,especially if he be a child. For this feaver frequently invades children by anger, great and long fear, or the two hot milk of the nurse,overheating in the Sun,the use of wine and other such like causes; they shall be kept in a hot and moist ayre,have another Nurse,and be anointed with oyl of violets;to conclude,you shall apply medicins which are contrary to the morbifick cause.

Why the patients must not enter the Bath fasting.

How to prepare the body for the *Bath*.

Things strengthening the ventricle.

Epithemes

What a flux happening in a hectick feaver indicates.

How children be cured.

## CHAP. XXXIII. *Of the wounds of the* Epigastrium *and of the whole lower belly.*

THe wounds of the lower belly are sometimes before, sometimes behind, some only touch the surface thereof,others enter in;some passe quite through the body,so that they often leave the weapon therein;some happen without hurting the contained parts; others grievously offend these parts, the liver, spleen, stomach, guts,kidneys,womb, bladder, ureters, and great vessells,so that oft-times a great portion of the Kall, falls forth.We know the Liver is wounded, when a great quantity of blood comes forth of the wound, when a pricking pain reaches even to the sword-like gristle,to which the Liver adheres.Oft-times more choler is cast up by vomit, and the Patient lyes on his belly with more ease and content.

Their differences.

Signs of a wounded liver.

Signs that the stomach and smaller guts are wounded.

When the stomach or any of the small guts are wounded,the meat & drink break out at the wound, the *Ilia* or flanks swell and become hard,the hicket troubles the Patient,and oft-times he casts up more

Signs to know when the greater guts are wounded.

choler, and grievous pain wrings his belly, and he is taken with cold sweats, and his extream parts wax cold.

If any of the greater guts shall be hurt, the excrements come forth at the wound: When the Spleen is wounded, there flows out thick and black blood, the Patient is oppressed with thirst, and there are also the other signs, which we said use to accompany the wounded Liver. A difficulty of making water troubles the Patient whose reins are wounded, blood is pissed forth with the Urine, and he hath a pain stretched to his groins and the regions of the Bladder and Testicles.

Signs that the Kidneyes are hurt.

Signs that the Bladder is wounded.

The Bladder or Ureters being wounded, the flanks are pained, and there is a Tension of the *Pecten* or share, blood is made in stead of urine, or else the urine is very bloody, which also divers times comes forth at the wound. When the wombe is wounded, the blood breaks forth by the privities, and the Symptomes are like those of the Bladder.

Signs that the wombe is wounded.

The wounds of the liver are deadly, for this part is the work-house of the blood, wherefore necessary for life; besides by wounds of the liver the branches of the Gate or Hollow veins are cut, whence ensues a great flux of blood not only inwardly, but also outwardly, and consequently a dissipation of the spirits and strength.

Prognosticks.

But the blood which is shed inwardly amongst the bowels putrefies and corrupts, whence followes pain, a feaver, Inflammation, and lastly death. Yet *Paulus Ægineta* writes, that the lobe of the Liver may be cut away without necessary consequence of death. Also the wounds of the Ventricle and of the small Guts, but chiefly of the *Iejunum* are deadly; for many vessells run to the *Iejunum* or empty Gut, and it is of a very nervous and slender substance, and besides it receives the cholerick humor from the bladder of the Gall. So also the wounds of the Spleen, Kidneys, Ureters, Bladder, Womb and Gall, are commonly deadly, but alwayes ill, for that the actions of such parts are necessary for life; besides, divers of these are without blood and nervous others of them receive the moist excrements of the whole body, and lye in the innermost part of the body, so that they do not easily admit of medicins. Furthermore, all wounds which penetrate into the capacity of the belly, are judged very dangerous, though they do not touch the contained bowels; for the encompassing and new ayr entring in amongst the bowels, greatly hurts them, as never used to the feeling thereof; adde hereto the dissipation of the spirits which much weakens the strength. Neither can the filth of such wounds be wasted away according to the mind of the Chirurgeon, whereby it happens, they divers times turn into fistula's, as we said of wounds of the Cheft, and so at length by collection of matter cause death. Yet I have dressed many who by Gods assistance & favour have recovered of wounds passing quite through their bodies.

*Lib. 6. cap. 88.*

*A* History.

I can bring as a witness the steward of the Portingall Embassadour, whom I cured at *Melun*, of a wound made with a sword so running through his body, that a great quantity of excrements came forth of the wounded Guts, as he was a dressing, yet he recovered.

Another History.

Not long agoe *Giles le Maistre* a Gentleman of *Paris* was run quite through the body with a Rapier, so that he voided much blood at his mouth and fundament divers dayes together, whereby you know the Guts were wounded; and yet he was healed in twenty dayes. In like sort the wounds of the greater vessels are mortall, by reason of the great effusion of blood and spirits which ensues thereupon.

## CHAP. XXXIIII. *The cure of wounds of the lower belly.*

The first cogitation in curing of these wounds ought to be whether they pierce into the capacity of the Belly; for those which passe no further than the *Peritonæum* shall be cured like simple wounds which only require union. But those which enter into the capacity must be cured after another manner. For oft times the Kall or Guts, or both fall forth at them.

The cure of a wounded Gut.

A gut which is wounded must be sowed up with such a seam as Furriers or Glovers use, as we formerly told you; and then you must put upon it a powder made of Mastich, Myrrh, Aloes and Bole. Being sowed up, it must not be put up boysterously together and at once into its place, but by little and little, the Patient lying on the side opposite to the wound. As for example, the right side of the Guts being wounded and falling out by the wound, the Patient shall lye on his left side, for the more easy restoring of the faln down Gut, and so on the contrary. If the lower part of the Guts being wounded slide through the wound, then the Patient shall lye with his head low down, & his buttocks raised up by putting a pillow under them; If the upper part be hurt, then must he lye quite contrary, that the Guts falling downwards by such a site, may give way to these which are faln out through the wound. But often in this case, the Guts having taken cold by the encompassing ayre, swell up and are distended with wind, the which you must discuss before you put them into their place, with a fomentation of the decoction of camomill, melilot, aniseeds and fennell applyed with a spunge, or contained in a bladder; or else with chickens, or whelps cut alive in the midst and laid upon the swelling; for thus they do not only discuss the flatulency, but also comfort the afflicted part. But if the inflation cannot thus be discussed, the wound shal be dilated, that so the Guts may return the more freely to their place.

The cure when the Kall falls out.

If the Kall shall fall out, it must be speedily restored to its place, for it is very subject to putrefie; for the fat, whereof for the most part it consists, being exposed to the ayre, easily loses its native heat, which is small and weak, whence a mortification ensues. Hence is that of *Hippocrates*; If the Kall fall out, it necessarily putrefies. The Chirurgeon shall know whether it putrefie, or not, by the blackness and the coldness you may perceive by touching it; neither must you when it putrefies presently restore it to its place, for so the contagion of the putrefaction would spread to the rest of the parts: but whatsoever thereof is putrefied shall be twitched and bound hard with a string and so cut off, and the rest restored to his proper place: but it's good after cutting of it away to leave the string still hanging thereat, that so you may pluck and draw forth whatsoever thereof may by being too strait bound fall away into the capacity of the belly. Some think it to be better to let the Kall thus bound to hang forth untill

*Hip. Aph. 58. sect. 6.*

till that portion thereof which is putrefied fall away of it ſelf, and not to cut it off. But they are much deceived, for it hanging thus would not cover the guts, which is the proper place. The Guts and Kall being put up, if the wound be great and worth ſpeaking of, it muſt be ſowed with that ſuture which is termed *Gaſtroraphia*; but this kind of ſuture is thus made. The needle at the firſt putting in muſt only take hold of the *Peritonæum*, and then on the oppoſite ſide only of the fleſh, letting the *Peritonæum* alone, & ſo go along putting the needle from without inwards, and from within outwards, but ſo that you only take the muſculous fleſh & skin over it, & then only the *Peritonæum*, until you have ſowed up all the wound. He which doth otherwiſe ſhall undergo this danger, that whereas the coat *Peritonæum* is of it ſelf without blood, it being divided, or wounded cannot of it ſelf be united to it ſelf, therefore it requires an intercourſe of fleſh: otherwiſe unleſs it be thus united by the benefit of the fleſh intermixed therewith, there would remain an uncurable tumor after the wound is cicatrized on the outſide. But that which we ſaid before according to *Galens* mind, that all the wounds muſt be ſowed, it is not ſo to be taken as if that the wound muſt be ſowed up to the very end; for in the lower part of the wound there muſt be left a certain ſmall vent by which the quitture may paſs forth, which being wholly cleanſed and exhauſted, the wound muſt be quite healed up. But the wounds which ſhall penetrate into the ſubſtance of the liver, ſpleen, ventricles, and other bowells, the Chirurgeon ſhall not ſuffer them to be without medicines as if they were deſperate, but here ſhall ſpare neither labour nor care to dreſs them diligently. For doubtfull hope is better then certain deſpair. The bladder, womb, & right gut being wounded, detergent and agglutinative injections ſhal be put up by their proper paſſages. I have read nothing as yet in any Author of the wounds of the fat, for al of them refer the cure therof to the wounds of the Muſcles. Yet I wil ſay this by the way, that wounds of the fat how deep ſoever they be, if they be only ſimple, may be dreſſed wihout putting in of any Tent, but only dropping in ſome of my balſam, and then laying upon it a plaiſter of *Gratia Dei*, or ſome ſuch like, for ſo they will heal in a ſhort time.

*Lib. 5. Meth. cap. 4.*

The cure of the wounded fat.

## CHAP. XXXV. *Of the wounds of the Groins, Yard and Teſticles.*

When the Groins and neighbouring parts are wounded, we muſt firſt conſider whether they pierce to within: and if they do penetrate, to what inward parts they come, whether to the bladder, the womb, or right gut: for theſe parts are ſuch neer neighbours that oft-times they are all wounded with one blow. But for the wounds of the Teſticles, and genitall parts, becauſe they are neceſſary inſtruments for the preſerving the *ſpecies* by generation, or a ſucceſſion of individualls, and to keep all things quiet at home, therefore the Chirurgeon ought to be very diligent and carefull for their preſervation. Wherefore if they ſhould chance at any time to be wounded, they ſhall be dreſſed as we have formerly delivered, the medicines being varied according to the ſtate of the wound, and the appearing and happening ſymptoms; for it would be a thing of immenſe labour to handle all things in particular.

## CHAP. XXXVI. *Of the Wounds of the Thighes and Legs.*

Wounds which have been received on the inſide of the Thighes, have often cauſed ſodain death, if they have come to the vein *Saphena*, or the great Artery, or the Nerves, the aſſociates of theſe veſſels. But when they are ſimple, there is nothing which may alter the uſuall manner of cure. Yet the Patient muſt be carefull to lye in his bed: for the vulgar *Italian* proverb is true: *La mano al petto, la gamba al letto*, [that is, the hand on the breaſt, and the leg on the bed.] But when they penetrate more deeply into the ſubſtance of the part, they bring horrid and fearfull ſymptomes, as an inflammation, an abſceſs, from whence oft-times ſuch aboundance of matter iſſues forth, that the Patient falls into an *Atrophia* and conſumption. Wherefore ſuch wounds and ulcers require a carefull & induſtrious Chirurgeon, who may fitly make inciſions neceſſary for the corrupt parts, & callofity of the fiſtulous ulcer. Some Chirurgeons have been ſo bold as to ſow together the end of the Tendons of the Ham, and of other joints, when they have been quite cut aſunder. But I durſt never attempt it for fear of pain, convulſions and the like horrid Symptoms. For the wounds of that large tendon which is compoſed in the calf of the Leg by the concourſe of three muſcles, and goes to the heel, I have obſerved that when it hath been cut with the ſword, that the wounds have been long and hard to cure; and beſides when at the laſt they have been healed, as ſoon as the Patient hath got out of his bed, and indeavoured to go, they have grown ill and broke open again. Wherefore in ſuch like wounds let the Patient have a care that he begin not to go or too boldly to uſe his hurt leg before it be perfectly cicatrized and the ſcar grown hard. Therefore that the Patient may be in more ſafety, I judg it altogether neceſſary, that he uſe to go with Crutches, for a good while after the wound is perfectly healed up.

Why wounds of the inſide of the thigh are oft-times deadly.

The large Tendon of the heel hard to conſolidate.

## CHAP. XXXVII. *Of the Wounds of the Nerves and nervous parts.*

The continuity of the nervous parts is divers wayes looſed by the violent incurſion of external things; as by things which contuſe, batter and grind in ſunder, as by the blow of a ſtone, cudgell, hammer, lance, bullet out of a gun, or croſsbow; by the biting of greater teeth; or the pricking of ſome ſharpe thing, as a needle, bodkin, penknife, arrrow, ſplinter; or the puncture of ſome venemous thing, as of a Sea Dragon; or the edg of ſome cutting thing, as a ſword or rapier; or of ſtretching things which violently tear aſunder the nervous bodies. Hence therefore it is, that of ſuch wounds ſome are ſimple, others compound, and the compound, ſome more compound than other. For of theſe ſome are ſuperficiary and ſhort, others deep and long, ſome run alongſt the nervous body, others run broadwayes; ſome cut the part quite aſunder, others only a portion thereof. The ſymptomes which follow upon ſuch wounds are, vehement pain, and defluxion, inflammation, abſceſs, feaver, *deliri-*

Differences drawn from things wounded.

Their ſymptomes

*um*, ſowning, convulſion, gangrene, ſphacell; whence often death inſues by reaſon of that ſympathy, which all the nervous parts have with the brain. Amongſt all the wounds of the nervous parts, there is none more to be feared then a puncture, or prick, nor any which cauſeth more cruell and dangerous ſymptomes. For by reaſon of the ſtraitneſs of the wound, medicines can neither be put in, nor the ſanious matter paſs forth; now the ſanious matter by long ſtay acquires virulency, whereby the nervous parts are tainted and ſwoln, ſuffer pain, inflammation, convulſions, and infinite other ſymptomes; of theſe the wounds are moſt dangerous, by which the nervous and membranous bodies are but half cut aſunder. For the portion thereof which remains whole, by its drawing & contracting it ſelf towards the originall, cauſeth great pain and convulſion by ſympathy. The truth hereof is evident in wounds of the head, as when the *pericranium* is half cut, or when it is cut to apply a trepan. For the cutting thereof infers far greater pain, than when it is cut quite aſunder. Wherefore it is ſafer to have the nervous body quite cut off, for ſo it hath no community, nor conſent with the upper parts, neither doth it labour, or ſtrive to reſiſt the contraction of its ſelf; now this contrariety, and as it were fight, is the cauſe of pain, yet there ariſes another miſery from ſuch a wound, for the part whereinto the nerve which is thus cut inſunder paſſes, thence forwards loſeth its action.

Why a puncture of a nerve is deadly.

## CHAP. XXXVIII. *Of the cure of Wounds of the Nervous parts.*

A wound of of the nervous parts indicates contrary to the general cure of wounds.

IT is the ancient doctrine of the antient Phyſitians, that the wouuds of the nervous parts ſhould not preſently be agglutinated (which notwithſtanding the generall and firſt indication uſually taken from the ſolution of continuity requires) but rather, chiefly if they be too ſtrait, that the punctures ſhould be dilated, by cutting the parts which are above them, and let them be kept long open that the filth may paſs freely forth, and the medicine enter well in. Yet I in many cures have not followed this counſel, but rather that which the common indication requires.

*A* Hiſtory.

That cure is in freſh memory which I performed upon *Monſieur le Cocq*, a Proctor of the ſpirituall court, who dwelt in our Ladies ſtreet; he gathering and binding up ſome looſe papers, run a penknife which was hid amongſt them, through his hand. Alſo one of his neighbours who went to ſpit a piece of beef, thruſt the ſpit through the midſt of his hand; But I preſently agglutinated both their wounds, without any danger, dropping preſently in at the firſt dreſſing a little of my balſam warm, and putting about it a repelling and aſtringent medicine, and by this means they were both of them healed in a ſhort time, no ſymptome thereupon happening. Yet I would not have the young Chirurgeon to run this hazard, for firſt he muſt be well practiſed and accuſtomed to know the tempers and habits of men; for this manner of curing would not do well in a plethorick body, or in a body replete with ill humors, or indued with exquiſite ſenſe. Therefore in ſuch a caſe it will be ſafer to follow the courſe here ſet down. For wounds of the nerves do not only differ from other wounds, but alſo among themſelves in manner of curing. For although all medicines which draw from far, and waſte ſanious humors, may be reputed good for the wounds of the nerves; yet thoſe which muſt be applyed to punctures and to thoſe nerves which are not wholly laid open, ought to be far more powerful, ſharp & drying, yet ſo that they be not without biting, that ſo penetrating more deep they may draw forth the matter, or elſe conſume and diſcuſs that which either lies about the nerves, or moiſtens their ſubſtance. On the contrary, when the ſinews are bared from fleſh and adjoyning particles, they ſtand in need but of medicines, which may only dry. Here you may furniſh your ſelves with ſufficient ſtore of medicines good for the nerves howſoever pricked. As ℞. *Terebinth.ven.& olei veteris an.* ℥ j. *aquæ vitæ parum.* Or ℞. *olei Terebinth.* ℥j. *aquæ vitæ* ℥ j. *euphor.* ℥ ß. Or ℞ *radices Dracontiæ, Brioniæ, valerianæ, & gentianæ exſiccatas, & in pulverem redactæ, miſce cum decocto centaurii, aut oleo, aut exungia veteri*; drop hereof warm into the wound as much as ſhall ſuffice. Or elſe put ſome Hogs, Gooſe, Capons, or Bears greaſe, old oil, oil of Lillies or the like, to *Galbanum*, pure Rozin, *opopanax* diſſolved in *aqua vitæ* and ſtrong vinegar. Or ℞. *olei hypericonis ſambuti, & de euphorbio an.* ℥ j. *ſulphuris vivi ſubtiliter pulveriſati* ℥ ß, *gumoni ammoni. bdellii an.* ℈ ij. *aceti boni* ℥ ij. *vermium terreſt. præparat.* ℥ j. *bulliant omnia ſimul ad conſumptionem aceti.* Let as much hereof as ſhall ſuffice be dropped into the wound; then apply this following cerate, which draws very powerfully. ℞. *olei ſupra ſcripti* ℥ j. *terebinth. venet.* ℥ ß. *diachylonis albi cum gummi,* ℥ x. *ammoniac. bdellii in aceto diſſolutorum, an.* ℥ ij. *reſin. pini, gum. elemi, picis navalis an.* ℥ v. *ceræ quod ſufficit, fiat ceratum ſatis molle.* We muſt uſe ſome whiles one, ſome whiles another of theſe medicines in punctures of the Nerves with choiſe and judgment, according to their conditions, manner, depth, and the temperaments and habit of the wounded bodies. But if the pain yeeld not to ſuch remedies, but rather increaſe, with the inflammation of the affected part, a ſwelling of the lips of the wound, and ſweating forth of a ſerous, thin and virulent matter or filth, then you ſhall poure into it ſcalding oil, and ſhall touch three or four times not only the ſurface of the wound but the bottom thereof with a rag dipped therein and tyed to the end of a *ſpatula*. For this will take away the ſenſe from the Nerve, Tendon, or Membrane, like as if they were burnt with a cautery, and ſo the pain will be eaſed. So in the moſt grievous pains of rotten teeth, the thruſting of an hot iron into their roots, or ſtopping them with cotten dipped in oyl of Vitrioll, or *aqua vitæ*, gives moſt certain caſe; for by burning the nerve which is inſerted into their roots, the ſenſe and ſo conſequently the pain is taken away. So alſo in malignant, gnawing, eating, and ſpreading ulcers, which are alwaies aſſociated with much pain, the pain ceaſes by applying an Eſcharotick, as the powder of Alum, or Mercury, or *ægyptiacum* made ſomewhat more ſtrong than uſuall. That the young Chirurgeon may be more ready for this practiſe and the uſe of the former medicines, I have thought good to inſert the following Hiſtory both for the lateneſs of the thing and the pleaſing memory of the moſt laudable Prince.

Medicins fit for wounds of the nerves.

VVhat wounds of the Nerves muſt be burnt.

A certain Anodyne in pain of the teeth.

VVhy Eſcharoticks muſt be uſed to ſpreading ulcers.

A famous hiſtory.

*Charles* the ninth, the French King, being ſick of a Feaver, *Monſieur Capellan* and *Caſtellan* his Phyſitians thought it fit he ſhould be let blood; for the performance whereof, there was called a Chirurgeon wondrous famous for that buſineſs; but when as he by chance had pricked a nerve in ſtead of a vein, the

King

King cryed out,that he felt a mighty pain in that place. Then I bid, that the ligature ſhould ſtraightwaies be looſed,otherwiſe the arm would preſently be much ſwelled.But he going ſlowly about it,behold the arm began to ſwel with ſuch contraction,that he could not bend it,nor put it forth,and cruel pain moleſted not only the pricked particle, but all the whole member beſides. I forthwith laid upon the wound a plaiſter of *Baſilicon*,to hinder the agglutination thereof,& then I wrapped al the arm in a double linnen cloth dipped in oxycrate, putting upon it an expulſive ligature,which beginning at the wriſt and ending at the top of the ſhoulder,might keep the blood and ſpirits from fear of defluxion and inflammation.This being thus performed,we went aſide to conſult what was neceſſary to be done, both to aſſwage the pain,as alſo to divert the other ſymptoms, which uſually happen upon punctures of the nerves. I being deſired, thus delivered my opinion,that in my mind, there were nothing better, then preſently to drop into the wound ſome oyl of Turpentine warmed and mixed with a little *aqua vitæ*.And then all the arm ſhould be covered with a plaiſter of *Diacalcitheos* diſſolved in vinegar and oyl of Roſes,bound over and beſides with the expulſive ligature,which we formerly mentioned.For the oyl and *aqua vitæ* have a faculty to penetrate into the bottome of the wound, and to exhauſt and dry up the ſerous and virulent humor, which ſweats from the ſubſtance of the pricked nerve; and alſo to mitigate the pain by its actuall heat.Furthermore the emplaiſter *Diacalcitheos* hath a faculty to diſſolve the humor which hath already fallen down into the arm,and to hinder the entrance and defluxion of any new matter. And the ligature is ſuch as by its moderate aſtriction would ſerve to ſtrengthen the muſcles,and to preſs out and repell the humors which were fallen down into the upper part, and to prohibit that which is ready to fall down.Mine advice being approved of the Phyſitians both in word and deed,the pain was mitigated. But the humor ſtayed in the part, for the diſſolving and drying whereof, this following remedy was uſed. ℞. *far. hordei & orobi an.* ℥ ij.*flor.chamæm.& melilot.an.*p.ij. *butyr. recentis ſine ſale* ℥ i ß.*lixivii barbitonſoris quod ſufficit,fiat cataplaſma ad formam pultis*. By theſe remedies the King at the laſt after 3. months ſpace was perfectly healed,ſo that there remained no ſign of the depraved action in the part.But if at any time there ſhall be ſo great contumacy,that it will not yeeld to theſe means,but that there is imminent danger of a convulſion; it will be better to cut it in ſunder whether Nerve,Tendon or Membrane,than to expoſe the Patient to the danger of a deadly convulſion; for thus indeed the peculiar action of that part will be loſt, but the whole body preſerved thereby; for ſo we had determined by common conſent, that if the pain which afflicted the King would not yeeld to the preſcribed remedies,either to poure in ſcalding oyl,or elſe to cut the ſinew quite aſunder.

A diſcuſſing and drying cataplaſm.

For the late and ſad memory of Miſtris *Courtin* dwelling in the ſtreet of the holy-Croſs was in our minds,who of a vein not well opened in her arm fell into a Gangrene and totall mortification of that whole part,of which ſhe dyed,becauſe ſhe was not dreſſed with the formerly mentioned medicins.Yet we muſt abſtain from theſe too powerfull remedies,when the pricked nerve ſhall lye bare, for elſe the pain would be increaſed,& more grievous ſymptoms follow.Wherefore as I formerly wiſhed;more mild medicins muſt be applyed,which may dry up the ſerous humor without biting or acrimony, as ℞. *terebinth.venet.in aq.roſ.lota* ℥ ij. *boli armeni ſubtiliter pulveriſati,* ℥ ij. *incorporentur ſimul*. Our Balſam alſo is excellent in this caſe,and this of *Vigoes* whech follows.℞ *olei roſar.omphacini* ℥ j ß.*olei de terebinth.* ℥ iij. *ſucci plant.ag.* ℥ ß. *ſemin. hypericonis aliquantulum contriti,m.*ß.*tutiæ præpar.* ℥ iij. *calcis decies lotæ cum aqua plantagin.* ℥ ij. *antimonii* ℥ j. *ſevi hircini,& vitulini,an.*℥v.*vermium terreſtrium cum vino lotorum* ℥jß. *bulliant omnia ſimul dempta tutia in cyatho decoctionis hordei,ad conſumptionem aquæ & vini,colentur,rurſumq;igni admoveantur, addendo tutiam, & fiat linimentum cum cera alba,&* ℥ ß.*croci*.This liniment aſſwages pains,& covers the bared nerves with fleſh.This cure of punctured nerves,may with choiſe and judgment and obſerving the proportion of the parts be transferred to the pricked Tendons and membranes.But take this as a generall & common rule,that all nervous bodies howſoever hurt, are to be comforted by anointing them with hot oyls,ſuch as the oyls of Bayes,Lillies,of Worms,Sage,or ſome other ſuch like remedy being applyed to their originalls and more notable paſſages;as to the originall of the ſpinall marrow, the armpits and groins. Neither do I think it fit in this place to omit an affect which ſometimes happens to the large Tendon of the heel,of which we formerly made mention. For it oft-times is rent or torn by a ſmall occaſion without any ſign of injury or ſolution of continuity apparent on the outſide as by a little jump,the ſlipping aſide of the foot,the too nimble getting on horſeback, or the ſlipping of the foot out of the ſtirrop in mounting into the ſaddle. When this chance happens it will give a crack like a Coachmans whip; above the heel,where the tendon is broken,the depreſſed cavity may be felt with your finger, there is great pain in the part,and the party is not able to go. This miſchance may be amended by long lying and reſting in bed, and repelling medicins applyed to the part affected in the beginning of the diſeaſe,for fear of more grievous ſymptomes, and then applying the Black plaiſter, or *Diacalcitheos* or ſome other ſuch,as need ſhall require;neither muſt we hereupon promiſe to our ſelves or the Patient certain or abſolute health.But on the contrary at the beginning of the diſeaſe we muſt foretell that it will never be ſo cured but that ſome reliques may remain, as the depreſſion of the part affected and depravation of the action and going; for the ends of this broken or relaxed Tendon by reaſon of its thickneſs and contumacy cannot eaſily be adjoined,nor being adjoined,united.

A Hiſtory.

An anodyne and Sarcotick Balſam.

A generall rule for all wounds of all Nervous parts.

## CHAP. XXXIX. *Of the wounds of the joynts.*

Why wounds of the joynts are malignant.

BEcauſe the wounds of the joynts have ſomething proper and peculiar to themſelves, beſides the common nature of wounds of the Nerves,therefore I intend to treat of them in particular.Indeed they are alwayes very dangerous,and for the moſt part deadly by reaſon of the nervous productions and membranous Tendons wherewith they are bound and ingirt and into which the Nerves are inſerted: whereby it comes to paſs, that the exquiſite ſenſe of ſuch like parts will eaſily bring malign ſymptomes,eſpecially if the wound poſſeſs an internall, or as they term it,a domeſtique part of them;as for example,the armpits,the bending of the arm, the inner part of the

wriſt,and ham,by reaſon of the notable Veins,Arteries,and Nerves of theſe parts,the looſed continuity of all which brings a great flux of blood,ſharpe pain and other malignant ſymptomes; all which we muſt reſiſt according to their nature and condition,as a flux of bloud with things ſtaying, bleeding;pain with anodynes.If the wound be large and wide,the ſevered parts ſhall be joined with a future,leaving an orifice in the lower part,by which the quitture may paſs forth.This following powder of *Vigoes* deſcription muſt be ſtrewed upon the future. ℞. *thuris ſang.draconis,boli armen.terræ ſigill.an.* ʒ ij. *aloes,maſtich.an.*ʒ j.*fiat pulvis ſubtilis.* And then the joynt muſt be wrapped about with a repercuſſive medicine compoſed of the whites of Egs,a little oil of Roſes,Bole,Maſtich,and barly flowre. If it be needfull to uſe a Tent,let it be ſhort,and according to the wound thick,leſt it cauſe pain:and moreover let it be anointed with the yolk of an eg,oil of Roſes, waſhed turpentine and a little ſaffron. But if the wound be more ſhort & narrow,it ſhal be dilated,if there be occaſion,that ſo the humor may paſs away more freely.You muſt reſt the part,and beware of uſing cold,relaxing,mollifying,humecting, and unctuous medicines,unleſs peradventure the ſharpneſs of the pain muſt be mitigated. For on the contrary,aſtringent and deſiccant medicins are good,as this following cataplaſm. ℞. *ſurfur. macri, farin. hordei,& fabarum.an.*ʒ iiij.*florum chamæ.& melil.an.*m.ß.*terebinth.*ʒ iij.*mellis communis*ʒ ij.*ol. myrtin.* ʒ j. *oxymelitis, vel oxycrat.vel lixivii com.quantum ſufficit,fiat cataplaſma ad formam pultis.*Or you may compoſe one of the lees of wine,Wheat bran,the powder of Oaken bark,cypreſs nuts,galls and Turpentine, and ſuch like,that have an aſtringent,ſtrengthening and drying quality,and thereby aſſwaging pain, and hindering the defluxion of humors. This following medicine is aſtringent and agglutinative.℞ *terebinth. venet.*ʒ ij.*aq.vitæ parum,pulveris maſtich.aloes,myrrhæ,boli armen.an.*ϑ ij.And alſo our balſam wil be good in this caſe,if ſo be that you add hereto ſo much powder which dryes without acrimony,as occaſion ſhal ſerve.I admoniſhed you before to take heed of cold, and now again ; for it is hurtfull to all wounds and ulcers,but eſpecially to theſe of the nervous parts;hence it is that many dye of ſmal wounds in the winter,who might recover of the ſame wounds though greater in the Summer.For cold according to *Hippocrates* is nipping to ulcers,hardens the skin, and hinders them from ſuppuration, extinguiſheth naturall heat,cauſes blackneſs,cold aguiſh fits,convulſions,and diſtentions.Now divers excrements are caſt forth of wounds of the joynts,but chiefly albugineous,that is,reſembling the white of an eg, and mucous,and ſometimes a very thin water,all which ſavour of the nature of that humor which nouriſheth theſe parts.For to every part there is appropriate for his nouriſhment and conſervation, a peculiar balſam,which by the wound flows out of the ſame part,as out of the branches of the vine,when they are pruned,their radicall moiſture or juyce flows;whence alſo a *Callus* proceeds in broken bones.Now this ſame mucous,& albugineous humor,flow & as it were frozen flowing from the wounded joynts,ſhews the cold diſtemper of the parts,which cauſe pain,not to be orecome by medicins only potentially hot. Wherefore to correct that,we muſt apply things actually hot,as beaſts and ſwines bladder half full of a diſcuſſing decoction,or hot bricks quenched in wines.Such actuall heat helps nature to concoct and diſcuſs the ſuperfluous humor impact in the joynts,and ſtrengthens them;both which are very neceſſary,becauſe the naturall heat of the joynts is ſo infirm that it can ſcare actuate the medicin unleſs it be helped with medicins actually hot. Neither muſt the Chirurgeon have the leaſt care of the figure and poſture of the part, for a vicious poſture increaſes ill ſymptomes,uſes to bring to the very part though the wound be cured,diſtortion,numneſs, incurable contraction;which fault leſt he ſhould run into,let him obſerve what I ſhall now ſay;If the forepart of the ſhoulder be wounded, a great boulſter muſt be under the armpit,and you muſt carry your arm in a ſcarf, ſo that it may bear up the lower part of the arm,that ſo the top of the ſhoulder may be elevated ſomewhat higher, and that ſo it may be thereby more ſpeedily and happily agglutinated and conſolidated.If the lower part be wounded, when fleſh begins to be generated and the lips of the wound to meet,you muſt bid the Patient to move and ſtir his arms divers wayes ever & anon,for if that be omitted or negligently done,when it is cicatrized,then it will be more ſtiffe and leſs pliable to every motion ; and yet there is a further danger leſt the arm ſhould totally loſe its motion.If the wound be upon the joynt of the elbow,the arm ſhal be placed and ſwathed in a middle poſture,that is,which neither too ſtraitly bows it,nor holds it too ſtiffly out; for otherwiſe when it is cicatrized,there will be an impediment either in the contraction or extention. When the wound is in the wriſt, or joints of the fingers either externally or internally,the hand muſt be kept half ſhut,continually moving a ball therein.For if the fingers be held ſtraight ſtretched forth,after it is cicatrized,they will be unapt to take up or hold any thing,which is their proper faculty.But if after it is healed, it remain half ſhut, no great inconveniency will follow thereon;for ſo he may uſe his hand divers wayes to his ſword, pike, bridle and in any thing elſe. If the joints of the Hip be wounded,you muſt ſo place the Patient that the thigh bone may be kept in the cavity of the huckle-bone,and may not part a hairs breadth there from,which ſhall be done with linnen boulſters and ligatures applyed as is fitting,and lying full upon his back.When the wound ſhall begin to cicatrize, the Patient ſhall uſe to move his thigh every way, leſt the head of the thigh-bone ſtick in the cavity of the huckle-bone without motion.In a wound of the knee,the leg muſt be placed ſtraight out,if the Patient deſire not to be lame.When the joints of the feet and toes are wounded,theſe parts ſhall neither be bended in nor out,for otherwiſe he will not be able to go. To conclude,the ſite of the foot and leg, is quite contrary to that of the arm and hand.

The cure.

An aſtringent and drying caplaſm.

*Aphor.*20. *ſect.*5.

VVhat matter uſually flows from wounds of the joynts.

VVhy things actually hot muſt be applyed to the wounded joynts.

Of the ſite and poſture of wounded joints.

## CHAP. XL. *Of the wounds of the Ligaments.*

THe wounds of the Ligaments,beſides the common manner of curing theſe of the Nerves, have nothing peculiar,but that they require more powerfull medicins, for their agglutination,deſiccation and conſolidating;both becauſe the Ligamentall parts are harder,and dryer, and alſo for that they are void of ſenſe. Therefore the foreſaid cure of Nerves,and joints may be uſed for theſe wounds:for the Medicins in both are of the ſame kind,but here they ought to be ſtronger

Ligaments more dry than Nerves,and without ſenſe,

ſtronger and more powerfully drying. The Theory and cure of all the ſymptomes which ſhall happen thereupon have been expreſſed in the Chapter of curing the wounds of the nervous parts, ſo that here we ſhall need to ſpeak nothing of them, for there you may find as much as you will. Wherefore here let us make an end of wounds, and give thankes to God the author and giver of all good for the happy proceſſe of our labours, and let us pray that that which remaines may be brought to a happy end, and ſecure for the health and ſafety of good people.

*The end of the tenth Booke.*

# *Of Wounds made by Gunſhot, other fiery Engines, and all ſorts of Weapons.*

## THE ELEVENTH BOOK.

*The Preface.*

I Have thought good here to premiſe my opinion of the originall, encreaſe, and hurt of fiery Engines, for that I hope it will be an ornament and grace to this my whole treatiſe: as alſo to intice my Reader, as it were with theſe junckets, to our following Banquet ſo much ſavouring of Gunpowder. For thus it ſhall be known to all whence Guns had their originall and how many habits and ſhapes they have acquired from poore and obſcure beginnings; & laſtly how hurtfull to mankind the uſe of them is. *Polydore Virgill* writes that a Germane of obſcure birth and condition was the inventor of this new engin which we term a Gun, being induced thereto by this occaſion. He kept in a mortar covered with a tyle, or ſlate, for ſome other certain uſes a powder (which ſince that time for its chief and new known faculty, is named Gunpowder.) Now it chanced as he ſtruck fire with a ſteel and flint, a ſpark thereof, by accident fell into the mortar, whereupon the powder ſuddainly catching fire, caſts the ſtone or tyle which covered the mortar, up on high; he ſtood amazed at the novelty & ſtrange effect of the thing, and withall obſerved the formerly unknown faculty of the powder; ſo that he thought good to make experiment thereof in a ſmall Iron trunk framed for that purpoſe according to the intention of his mind. When all things were correſpondent to his expectation, he firſt ſhewed the uſe of his engine to the Venetians, when they warred with the Genoveſes about *Foſſa Clodia*, in the year of our Lord 1380. Yet in the opinion of *Peter Meſſias*, their invention muſt have been of greater antiquity; for it is read in the Chronicles of *Alphonſus* the eleaventh King of *Caſtile*, who ſubdued the Iſles *Argezires*, that when he beſieged the chiefe Town in the year of our Lord 1343. The beſieged Moores ſhot as it were thunder againſt the aſſailants, out of Iron mortars. But we have read in the Chronicles written by *Peter* Biſhop of *Leons* of that *Alphonſus* who conquered *Toledo*, that in a certain ſea fight fought by the King of *Tunis*, againſt the Mooriſh King of *Sivill*, whoſe part King *Alphonſus* favoured, the *Tunetans* caſt lightning out of certain hollow Engins or Trunks with much noiſe. Which could be no other, than our Guns, though not attained to that perfection of art and execution which they now have.

*Lib.2.de inven. rerum.*

*Cap.8.prim. par.var. lect.*

I think the deviſer of this deadly Engin hath this for his recompence, that his name ſhould be hidden by the darkneſs of perpetuall ignorance, as not meriting for this his moſt pernicious invention, any mention from poſterity. Yet *Andrew Thevet* in his Coſmography publiſhed ſome few years agone, when he comes to treat of the *Suevi*, the inhabitants of Germany, brings upon the authority and credit of a certain old Manuſcript, that the Germane the inventer of this warlike Engine was by profeſſion a Monk and Philoſopher or Alchimiſt, born at *Friburg*, and named *Conſtantine Anclzen*. Howſoever it was, this kind of Engine was called *Bombarda* (*i*) a Gun, from that noiſe it makes, which the Greeks and Latines according to the ſound call *Bombus*; then in the following ages, time, art and mans maliciouſneſs added much to this rude and unpoliſht invention. For firſt for the matter, Braſſe and Copper, metalls farre more tractable, fuſible and leſſe ſubject to ruſt, came as ſupplies to Iron. Then for the form, that rude and undigeſted barrell, or mortar-like maſſe, hath undergone many formes and faſhions, even ſo far as it is gotten upon wheels, that ſo it might run not only from the higher ground, but alſo with more rapid violence to the ruin of mankind; when as the firſt and rude mortars ſeemed not to be ſo nimbly traverſed, nor ſufficiently cruell for our deſtruction by the only caſting forth of Iron and fire. Hence ſprung theſe horrible monſters of Canons, double Canons, Baſtards, Muſquits, Field peeces; hence theſe cruell and furious beaſts, Culverins, Serpentines, Baſiliſques, Sackers, Falcons, Falconets, and divers other names not only drawn from their figure and making, but alſo from the effects of their cruelty. Wherefore certainly I cannot ſufficiently admire the wiſdome of our Anceſtors, who have ſo rightly accommodated them with names agreeable to their natures; as thoſe who have not only taken them from the ſwifteſt birds of prey, as Falcons; but alſo from things moſt harmfull and hatefull to mankind, ſuch as Serpents, Snakes, and Baſiliſques. That ſo we might clearly diſcern, that theſe engines were made for no other purpoſe, nor with other intent, but only to be imployed for the ſpeedy and cruell ſlaughter of men; and that by only hearing them named we might deteſt and abhor them, as pernicious enemies of our lives. I let paſſe other engines of this ofſpring, being for their quantity ſmall, but ſo much the more pernicious & harmefull, for that they neerer aſſail our lives, may traiterouſly and forthwith ſeiſe upon us not thinking nor fearing any ſuch thing; ſo that we can ſcarſe have

VVho the inventor of Guns.

The reaſon of the name.

The danger of Pistols. have any means of escape; such are Pistols and other small hand-guns, which for shortness you may carry in your pocket, and so privily and suddainly taking them forth oppress the careless and secure. Fowling peeces which men usually carry upon their shoulders, are of the middle rank of these engines, as also Muskets and Caleevers, which you cannot wel discharge unless lying upon a Rest, which therefore may be called Breast-guns for that they are not laid to the cheek, but against the Breast by reason of their weight and shortness; All which have been invented for the commodity of footmen, and light horsemen. This middle sort of engine we call in Latine by a generall name *Sclopus*, in imitation of the sound, and the Italians who term it *Sclopetere*; the French call it *Harquebuse*, a word likewise borrowed from the Italians, by reason of the the touch-hole by which you give fire to the peece, for the Italians call a hole *Buzzo*. It is tearmed *Arcus (i)* a Bow, for that at this present it holds the same place in martiall affaires, as the Bow did of old; and as the Archers formerly, so at this day the Musquetiers are placed in front. From the same wretched shop and magazine of cruelty, are all sorts of Mines, Countermines, pots of fire, trains, fiery Arrowes, Lances, Crosse bowes, barrels, balls of fire, burning faggots, Granats, and all such fiery engines and Inventions, which closely stuffed with fuell and matter for fire, and cast by the defendants upon the bodies and Tents of the assailants, easily take fire by the violence of their motion. Certainly a most miserable and pernicious kind of invention, whereby we often see a thousand of heedlesse men blown up with a mine by the force of Gunpowder; otherwhiles in the very heat of the conflict you may see the stoutest souldiers seised upon with some of these fiery Engines, to burn in their harnesse, no waters being sufficiently powerfull to restrain and quench the raging and wasting violence of such fire cruelly spreading over the body and bowells. So it was not sufficient to have armes, Iron and fire to mans destruction, unlesse also that the stroak might be more speedy, we had furnished them, as it were with wings, so to fly more hastily to our own perdition, furnishing sithebearing death with wings so more speedily to oppress man, for whose preservation, all things contained in the world were created by God. Verily when I consider with my self all the sorts of warlike Engines, which the ancients used, whether in the field in set battlls, as Bowes, Darts, Crosbowes, Slings; or in the assault of Cities, & shaking or overturning their walls, as Rams, Horses, woodden towres, slings and such like; they seem to me certain childish sports & games made only in imitation of the former. For these modern inventions are such as easily exceed all the best appointed and cruell Engines which can be mentioned or thought upon, in the shape, cruelty and appearance of their operations. For what in the world is thought more horrid or fearfull than thunder and lightning? and yet the hurtfulness of thunder is almost nothing to the cruelty of these infernall Engines; which may easily appear by comparing together both their effects. Man alone of all creatures is not alwayes killed by being touched with thunder; but it immediatly killeth all other things which are subject to be toucht therewith. Nature bestowing this honour upon him, seeing so many creatures exceed him in strength: For all things ly contrary to man; and man, unless he be overthrown with it, doth not dye thereof. But these fire-spitting Engines do no more spare man, then they do other creatures, and kill without difference from whence soever they come, whither soever they are carryed, and howsoever they touch. There are many, but more are said to be the remedies against thunder; for beside the charms whereby the ancient Romans did suppose they might be driven away, they never penetrate deeper into the ground than five foot, therefore such as was fearfull thought the deeper caves most safe. Of those things which grow out of the earth, they do not touch the Bay tree, and that was the cause that it was counted a sign of Victory both in ancient and moderne times. Wherefore *Tiberius Cæsar* otherwise a contemner of God and religion, as he who indued with the Mathematicall sciences thought all things governed by Fate, yet because he exceedingly feared thunder, he alwayes carried a Lawrell wreath about his neck when the aire was troubled, for that this kind of leafe is reported not to be touched by thunder. Some report that he made him tents of Seales skinnes, because it toucheth not this kinde of creature of all these things that live in the Sea, as neither the Eagle amongst birds, which for that is fained to be *Ioves* squire. But on the contrary, charmes, the victorious Bay, the Seale or Sea-calfe, the Eagle or any such thing profits nothing against the violence of these fiery engines: no not a wall of ten foot thick will advantage. Lastly, this argues the immense violence of brasen Cannons above thunder, for that thunder may be dispersed and driven away with the noise and ringing of Bells, the sounding of Trumpets, the tinkling of brasen kettles, yea also by the shooting of such great Ordnance; to wit, the clouds, by whose collision and fight the Thunder is caused, being dispersed by this violent agatation of the air, or else driven further to more remote parts of the skies. But their fury once provoked, is stayed by no opposition, appeased by no remedy. As there are certain seasons of the year, so also there are certain Regions of the earth,, wherein Thunder is seldome or never heard. Thunders are rare in Winter and Summer, and that for contrary causes; for that in Winter the dense air is thickned with a thicker coat of clouds, and the frosty and cold exhalation of the earth extinguisheth what fiery vapours so ever it receives; which thing keeps *Scythia* and the cold countries about it free from Thunder. And on the contrary, too much heat preserves *Egypt*. For hot and dry exhalations of the earth are condensed into very thin, subtile and weak clouds. But as the invention, so also the harm and tempest of great Ordnance, like a contagious pestilence is spread and rages over all the earth, and the skies at all times sound again with their reports. The Thunder and Lightning commonly gives but one blow, or stroke, and that commonly strikes but one man of a multitude; But one great Cannon at one shot may spoil and kill a hundred men. Thunder, as a thing naturall, falls by chance, one while upon a high oak, another while upon the top of a mountain, and somewhiles on some lofty towre, but seldom upon man. But this hellish Engine tempered by the malice and guidance of man, assailes man only, and takes him for his only mark, and directs his bullets against him. The Thunder by its noise as a messenger sent before, foretells the storm at hand; but, which is the chief mischief, this infernall Engine

A comparison of the antient weapons with the modern.

*Plini. Lib. 2. Cap. 59.*

*Plin. Lib. 2. Cap. 55.*

*Sueton. in Tiberio.*

The wondrous force of great Ordnance.

*Plin. Lib. 2. Cap. 50.*

roars

juyce therein: then he strained it through a towell without much pressing; and added the Turpentine roars as it strikes, and strikes as it roars, sending at one and the same time the deadly bullet into the breast, and the horrible noise into the ear. Wherefore we all of us rightfully curse the author of so pernicious an Engine; on the contrary praise those to the skies, who endeavour by words and pious exhortations to dehort Kings from their use, or else labour by writing and operation to apply fit medicins to wounds made by these Engins. Which hath moved me, that I have written hereof almost with the first of the French. But before I shall do this, it seemeth not amisse, so to facilitate the way to the treatise I intend to write of wounds made by Gunshot, to premise two Discourses, by which I may confute and take away certain erroneous opinions which have possessed the mindes of divers; for that unless these be taken away, the essence and nature of the whole disease cannot be understood, nor a fitting remedy applyed by him which is ignorant of the disease.

The first Discourse which is dedicated to the Reader, refells and condemnes by reasons and examples the method of curing prescribed by *Iohn de Vigo*, whereby he cauterizeth the wounds made by Gunshot, supposing them venenate; and on the contrary proves that order of curing which is performed by suppuratives, to be so salutary and gentle, as that prescribed by *Vigo* is full of errour and cruelty. The second dedicated to the King, teaches that the same wounds are of themselves void of all poison, and therefore that all their malignity depends upon the fault of the air, and ill humors predominant in the bodies of the patients.

The arguments of the following discourses.

## *The first discourse wherein Wounds made by Gunshot, are freed from being burnt, or cauterized according to* Vigoes *Method.*

IN the year of our Lord 1536. *Francis* the French King, for his acts in war and peace stiled the Great, sent a puissant Army beyond the Alpes, under the government and leading of *Annas* of Mommorancy high Constable of France, both that he might relieve *Turin* with Victualls, souldiers, and all things needfull, as also to recover the Cities of that Province taken by the Marquis of *Guast* Generall of the Emperours forces. I was in the Kings Army the Chirurgeon of Monsieur of *Montejan* Generall of the foot. The Imperialists had taken the straits of *Suze*, the Castle of *Villane*, and all the other passages; so that the Kings army was not able to drive them from their fortifications but by fight. In this conflict there were many wounded on both sides with all sorts of weapons, but chiefly with bullets. I will tell the truth, I was not very expert at that time in matters of Chirurgery; neither was I used to dress wounds made by Gunshot. Now I had read in *Iohn de Vigo* that wounds made by Gunshot were venenate or poisoned, and that by reason of the Gunpowder; Wherefore for their cure, it was expedient to burn or cauterize them with oil of Elders scalding hot, with a little Treacle mixed therewith. But for that I gave no great credit neither to the author, nor remedy, because I knew that caustick could not be powred into wounds, without excessive pain; I, before I would run a hazard, determined to see whether the Chirurgeons, who went with me in the army, used any other manner of dressing to these wounds. I observed and saw that all of them used that *Method* of dressing which *Vigo* prescribes; and that they filled as full as they could, the wounds made by Gunshot with Tents and pledgets dipped in this scalding Oil, at the first dressings; which encouraged me to do the like to those, who came to be dressed of me. It chanced on a time, that by reason of the multitude that were hurt, I wanted this Oil. Now because there were some few left to be dressed, I was forced, that I might seem to want nothing, and that I might not leave them undrest, to apply a digestive made of the yolk of an egge, oil of Roses, and Turpentine. I could not sleep all that night, for I was troubled in mind, and the dressing of the precedent day, (which I judged unfit) troubled my thoughts; and I feared that the next day I should find them dead, or at the point of death by the poison of the wound, whom I had not dressed with the scalding oil. Therefore I rose early in the morning, I visited my Patients, and beyond expectation, I found such as I had dressed with a digestive only, free from vehemency of pain to have had good rest, and that their wounds were not inflamed nor tumifyed; but on the contrary the others that were burnt with the scalding oil were feaverish, tormented with much pain, and the parts about their wounds were swolne. When I had many times tryed this in divers others, I thought thus much, that neither I nor any other should ever cauterize any wounded with Gunshot. When we first came to *Turin*, there was there a Chirurgeon far more famous than all the rest in artificially and happily curing wounds made by Gunshot; wherefore I laboured with all diligence for two yeers time to gain his favour and love, that so at the length, I might learn of him, what kind of Medicine that was, which he honoured with the glorious title of Balsam, which was so highly esteemed by him, and so happy and succesfull to his patients; yet could I not obtain it. It fell out a small while after that the Marshall of *Montejan* the Kings Lieftenant, Generall there in *Piemont* dyed, wherefore I went unto my Chirurgeon, and told him that I could take no pleasure in living there, the favourer and *Mæcenas* of my studies being taken away; and that I intended forthwith to return to *Paris*, and that it would neither hinder, nor discredit him to teach his remedy to me, who should be so far remote from him. When he heard this, he made no delay, but presently wished me to provide two Whelpes, 1 pound of earthwormes, 2 pounds of oil of Lillies, six ounces of Venice Turpentine, and one ounce of *aqua vitæ*. In my presence he boyled the Whelpes put alive into that oil, untill the flesh came from the bones, then presently he put in the Wormes, which he had first killed in white wine, that they might so be cleansed from the earthy drosse wherewith they are usually repleat, and then he boiled them in the same oil so long, till they became dry, and had spent all their juice

*Lib. 1. de vulner. Cap. 8.*

VVhat chance may do in finding out of remedies.

The description of oil of Whelpes.

to it,and lastly the *aqua vitæ*.Calling God to witness,that he had no other Balsam, wherewith to cure wounds made with Gunshot,and bring them to suppuration.Thus he sent me away as rewarded with a most precious gift,requesting me to keep it as a great secret,and not to reveal it to any. When I came to *Paris*,I went to visit *Silvius* the Kings professor of Physick,wel known by name to all scholars for his great learning;he kept me long that so I might dine with him,and diligently enquires of me,if I had observed any new Method of curing wounds made by Gunshot,and combustions occasioned by Gunpouder. Then I affirmed to him that Gunpouder did not participate any thing of poyson, for that none of these things whereof it is compounded are poysonous;which reason ought to free the whole composition from suspition of poyson. And that experience confirmed this reason,for I had seen many souldiers, who would drink a great quantity of this pouder with Wine, because they were perswaded,that this drink would free them from malign symptomes when they were wounded; yet I give no credit to this perswasion;and lastly,for that many without any harm,strew this pouder upon rebellious ulcers.For the Bullets,I affirm, that they cannot conceive such heat,as to become caustick. For if you shoot them out of a Gun against a hard stone, yet you may presently take them up without any harm in your hands,though by striking upon the stone,they should become more hot.For the combustions caused by Gunpouder, I observed no speciall nor peculiar remedy,which might make their cure different from other combustions. To which purpose I related this insuing history.

Gunpouder not poysonous.

Bullets shot out of a Gun do not burn.

A History. One of the Marshall of *Montejan* his Kitchin boyes,fell by chance into a Caldron of Oil being even almost boyling hot;I being called to dress him,went to the next Apothecaries to fetch refrigerating medicines commonly used in this case: there was present by chance a certain old countrey woman, who hearing that I desired medicins for a burn,perswaded me at the first dressing,that I should lay two raw Onions beaten with a little salt; for so I should hinder the breaking out of blisters or pustules, as she had found by certain and frequent experience. Wherefore I thought good to try the force of her Medicine upon this greasie scullion.I the next day found those places of his body whereto the Onions lay,to be free from blisters,but the other parts which they had not touched,to be all blistered.

A medicine hindering blistring in burns,or scalds.

A History. It fell out a while after,that a *German* of *Montejan* his guard had his flasque full of Gunpouder set on fire,whereby his hands and face were grievously burnt: I being called,laid the Onions beaten as I formerly told you,to the middle of his face, and to the rest I laid medicins usually applyed to burns. At the second dressing I observed the part dressed with the Onions quite free from blisters & excoriation, the other being troubled with both;wherby I gave credit to the Medicin.Besides also,I lastly told him this,that I had observed,that that was the readiest to draw forth Bullets shot into the body,which sets the Patient in the same posture and site,as he was when he received his hurt.Which things when I had told him,together with many other handled at large in this work,the good old man requested me to publish in print my opinions concerning these things,that so the erroneous and hurtfull opinion of *Vigo* might be taken out of mens minds. To whose earnest intreaty when I had assented, I first of all caused to be drawn and carved many Instruments fit to draw forth Bullets and other strange bodies; then a short while after I first published this work in the year of our Lord 1545. which when I found to be well liked and approved by many,I thought good to set it forth the second time somewhat amended in the year 1552. And the third time augmented in many particulars in the year 1564. For I having followed many Wars, and detained as Chirurgeon in besieged Cities, as *Mets* and *Hesdin*, had observed many things under five Kings, whom I served with diligence and content. I had learnt many things from most expert Chirurgeons, but more from all learned Physitians, whose familiarity and favour for that purpose I alwayes laboured to acquire with all diligence and honest Arts; that so I might become more learned and skilfull by their familiarity, and discourse, if there was any thing especially in this matter and kind of wounds, which was hid from me,or whereof I was not well assured.Of which number I have known very few, who any thing seen in this kind of operation either by study,or experience in Wars,who have not thought that Wounds made by Gunshot ought to be dressed at the first with suppurative medicins,and not with scalding and Caustick oil. For this I affirm,which then also I testified to this good man,that I have found very many Wounds made in the fleshy parts by Gunshot,as easily cured as other Wounds, which be made by contusing things.But in the parts of the body where the bullet meets with bones and nervous particles,both because it tears and rends into small peeces those things which resist,not only where it touches,but further also,through the violence of the blow,therefore it causeth many and grievous symptomes,which are stubborn and difficult,and oft-times impossible to cure,especially in bodies replete with ill humors,in an ill constitution of the heaven and air,such as is hot,moist and foggy weather, which therefore is subject to putrefaction; & in like manner a freezing and cold season,which uses to mortifie the wounded parts not only of those that are hurt with Bullets,but in like sort with any other weapon;not only in bony and nervous particles,but also in musculous.Whereby you may understand,that the difficulty of curing proceeds not from the venenate quality of the Wounds; nor the combustion made by the Gunpouder,but the foulness of the Patients bodies,and the unseasonableness of the air.

Wounds made by Gunshot must be dressed with suppuratives.

The causes of difficulty in this cure.

A History. For proof whereof,I will set down,that which I not long agone, observed in a Scottish Nobleman the Earl of *Gordon*,Lord of *Achindon*,whom I cured at the appointment of the Queen-Mother. He was shot through both his thighes with a Pistoll,the bone being not hurt nor touched;and yet the 32.day after the Wound he was perfectly healed, so that he had neither feaver nor any other symptom which came upon the Wound.Whereof there are worthy witnesses,the Archbishop of *Glasco*, the Scottish Embassadour,*Francis Brigart*,and *Iohn Altine* Doctors of Physick,as also *Iames Guillemeau* the Kings Chirurgeon,and *Giles Buzet* a Scottish Chirurgeon,who all of them wondred that this Gentleman was so soon healed, no acrid medicin being applyed. This I have thought good to recite and set down, that the Readers may understand,that I for 30.years ago had found the way to cure Wounds made by Gunshot, with-

without scalding oil or any other, more acrid medicin; unless by accident the ilness of the Patients bodies and of the air caused any malign symptomes, which might require such remedies besides the regular and ordinary way of curing, which shall be more amply treated of in the following discourse.

What makes Chirurgeons sometimes use causticks in curing wounds made by Gunshot.

## *Another Discourse of these things, which King* Charles *the Ninth, returning from the expedition and taking of* Roven, *inquired of me concerning Wounds made by Gunshot.*

FOr that it pleased your Majesty one day, together with the Queen Mother, the Prince of *Rock upon Yon*, and many other Noble men, and Gentlemen, to inquire of me, what was the cause that the far greater part of the Gentlemen and common Souldiers which were wounded with Guns, and other warlike Engines, all remedies used in vain, either dyed, or scarse and that with much difficulty recovered of their hurts, though in appearance they were not very great, and though the Chirurgeons diligently performed all things requisite in their Art: I have made bold to premise this Discourse to that Tractate which I determin to publish concerning wounds made by Gunshot; both to satisfie the desires of the Princes and of many Gentlemen, as also the expectation they have of me, as being the Kings chief Chirurgeon, (which place being given me by *Henry* the Second, *Charles* the Ninth, a Son most worthy of such a Father, had confirmed) neither make I any question, but that many who too much insist upon their own judgment, and not throughly consider the things themselves, will marvail, and think it far from reason; that I departing from the steps of my ancestors, and dissenting wholly from the formerly received opinions, am far from their Tenents, who lay the cause of the malignity of wounds made by Gunshot, upon the poyson brought into the body by the Gunpouder, or mixed with the bullets whilst they are tempered or cast. Yet for all this, if they will curteously and patiently weigh my reasons, they shall either think as I do, or at least shall judg this my indeavour and pains taken for the publike good, not to be condemned nor contemned. For I shall make it evident by most strong reasons drawn out of the writings of the Ancients both Philosophers and Physitians, and also by certain experiments of my own, and other Chirurgeons, that the malignity and contumacy which we frequently meet withall in curing wounds made by Gunshot, is not to be attributed either to the poyson carryed into the body by the Gunpouder or Bullet, nor to burning imprinted in the wounded part by the Gunpouder. Wherefore to come to our purpose, that opinion must first be confuted, which accuseth wounds made by Gunshot of poyson; and we must teach, that there is neither any venenate substance, nor quality in Gunpouder, neither if there should be any, could it impoyson the bodies of such as are wounded. Which that we may the more easily perform, we must examin the composition of such pouder, and make a particular inquiry of each of the simples, whereof this composition consists, what essence they have, what strength and faculties, and lastly, what effects they may produce. For thus by knowing the simples, the whole nature of the composition consisting of them, will be apparently manifest.

The occasion of writing this discourse.

The argument of this discourse.

Gunpouder is not poysonous.

The simples which enter the composition of Gunpouder are only three, Charcoals of Sallow or Willow, or of Hemp stalks, Brimstone, and Salt-peter, and sometimes a little *aqua vitæ*. You shall find each of these, if considered in particular, void of all poyson and venenate quality. For first in the Charcoal you shall observe nothing but dryness, & a certain subtlety of substance, by means whereof it fires so sodainly, even as Tinder. *Sulphur* or Brimstone is hot and dry, but not in the highest degree, it is of an oily & viscid substance, yet so that it doth not so speedily catch fire as the coal, though it retain it longer being once kindled, neither may it be so speedily extinguished. Salt-peter is such, that many use it for salt, whereby it is evidently apparent that the nature of such simples is abolutely free from all poyson, but chiefly the Brimstone, (which notwithstanding is more suspected than the rest.) For *Dioscorides* gives Brimstone to be drunk, or supped out of a rear Egg to such as are Asthmatick, troubled with the cough, spit up purulent matter, and are troubled with the yellow Jaundise. But *Galen* applyes it outwardly to such as are bitten by venemous Beasts, to scabs, teaters, & leprosies. For the *aqua vitæ*, it is of so tenuous a substance that it presently vanisheth into air, and also very many drink it, and it is without any harm used in frictions of the exteriour parts of the body. Whence you may gather, that this pouder is free from all manner of poyson, seeing these things whereof it consists and is composed, want all suspition thereof. Therefore the *Germane* horsemen, when they are wounded with shot, fear not to drink off cheerfully half an ounce of Gunpouder dissolved in Wine; hence perswading themselves freed from such malign symptomes as usually happen upon such wounds; wherein whether they do right or wrong I do not here determin; the same thing many *French* souldiers forced by no necessity, but only to shew themselves more courageous, also do without any harm; but divers with good success use to strew it upon ulcers, so to dry them. Now to come to these, who think that the venenate quality of wounds made by Gunshot, springs not from the pouder, but from the bullet wherewith some poyson hath been commixt or joyned, or which hath been tempered or steeped in some poysonous liquor. This may sufficiently serve for a reply; that the fire is abundantly powerfull to dissipate all the strength of the poyson, if any should be poured upon or added to the Bullet. This much confirms my opinion which every one knows; The Bullets which the Kings Souldiers used to shoot against the Townsemen in the siege of *Roven*, were free from all poyson; and yet for all that they of the Town thought that thay were all poysoned, when they found the Wounds made by them, to be uncurable and deadly. Now

Of what it is made.

*Lib. 5. Cap. 73. Lib. 9. simpl. Cap. 36.*

Bullets cannot be poysoned.

on the other side the Townsmen were falsly suspected guilty of the same crime by the Kings Army, when as they perceived all the Chirucgrons labour in curing Wounds made by the Bullets shot from *Roven*, to be frustrated by their contumacy and malign nature; each side judging of the magnitude and malignity of the cause from the unhappy success of the effect in curing. Even as amongst Physitians according to *Hippocrates*, all diseases are termed pestilent, which arising from whatsoever common cause, kill many people; so also Wounds made by Gunshot, may in some respect be called pestilent, for that they are more refractory, and difficult to cure than others, and not because they partake of any poysonous quality, but by default of some common cause, as the ill complexions of the Patients, the infections of the air, & the corruption of meats and drinks. For by these causes wounds acquire an evil nature, and become less yeelding to medicins. Now we have by these reasons convinced of error that opinion which held Wounds made by Gunshot for poysonous; let us now come to overthrow that which is held concerning their combustion.

As *Galen* notes *ad sent.* 20. & 21. *sect.* 3. *lib.* 3. *Epid.*

Wounds made by Gunshot are not burnt.

First, it can scarse be understood how bullets which are commonly made of Lead, can attain to such heat, but that they must be melted, and yet they are so far from melting, that being shot out of a Musket they wil pierce through an armour and the whole body besides, yet remain whole, or but a little diminisht. Besides also, if you shoot them against a stone wall, you may presently take them up in your hand without any harm, and also without any manifest sense of heat; though their heat by the striking upon the stone should be rather increased if they had any. Furthermore, a Bullet shot into a barrell of Gunpouder, would presently set it all on fire, if the bullet should acquire such heat by the shooting, but it is not so. For if at any time the pouder be fired by such an accident, we must not imagine that it is done by the bullet bringing fire with it, but by the striking and collision thereof against some Iron, or stone that oppose s or meets therewith, whence sparks of fire proceeding as from a flint, the pouder is fired in a moment. The like opinion we have of thatched houses, for they are not fired by the bullet which is shot, but rather by some other thing, as linnen rags, brown paper and the like, which rogues and wicked persons fasten to their bullets. There is another thing which more confirms me in this opinion, which is; take a bullet of Waxe, and keep it from the fire, for otherwise it would melt, and shoot it against an inch board, and it will go through it; whereby you may understand that Bullets cannot become so hot by shooting, to burn like a cautery. But the Orifices (may some say) of such Wounds are alwayes black. This indeed is true, but it is not from the effect of heat brought thither by the bullet, but the force of the contusion. Now the contusion is exceeding great, both because the bullet is round, and enters the body with incredible violence. Of which those that are wounded will give you sufficient testimony, for there is none of them, which thinks not presently upon the blow, that as it were some post, or thing of the like weight, falls upon the affected member, whence great pain and stupidity possess the part, whereby the native heat and spirits are so much dissipated, that a Gangrene may follow. But for the Eschar which they affirm is made by the blow, and falls away afterwards, they are much mistaken. For certain particles of the membranes and flesh contused and torn by the violence of the bullet beguiles them; which presently putrefying are severed from the sound parts by the power of nature and the separating heat, which thing usually happens in all great Contusions. But for all that these so many and weighty reasons may free the Pouder from all suspition of Poison, and the bullet from all thought of burning; yet there are many who insisting upon Philosophicall arguments raise new stirs. For (say they) the discharging a peice of Ordinance is absolutely like Thunder and Lightning, which the rent and torn clouds cast from the middle region upon the earth; wherefore the Iron bullet which is shot out of the Cannon must needs have a venenate and burning faculty. I am not ignorant that Lightning generated of a gross and viscous exhalation, breaking the cloud wherewith it is incompassed, never fals upon the earth, but brings fire with it, one while more subtile, another while more gross, according to the various condition of the matter whence the exhalation hath arisen. For *Seneca* writes that there are three severall kinds of Lightning differing in burning, condition and plenty. One of them penetrates or rather perforates by the tenuity of the matter of the object which it touches. The other with a violent impetuosity breaks in sunder and dissipates the objects, by reason it hath a more dense, compact & forcible matter, like as Whirlwinds have. The third, for that it consists of a more terrestriall matter, burns what it touches, leaving behind it the impression of the burning. Also I know that Lightning is of a pestilent & stinking nature, occasioned by the grosness and viscidity of the matter whereof it is; which matter taking fire sends forth so lothsome & odious a smel, that the very wild beasts cannot indure it, but leave their Dens, if they chance to be touched with such a lightning. Besides also we have read in the Northern history of *Olaus Magnus*, that in some places after a Lightning, you shall find a whole Plain spread over with Brimstone, which Brimstone notwithstanding is extinguished, unprofitable, and of no efficacy. But grant these things be thus, yet must we not therefore conclude, that the Bullets of the great Ordnance carry poyson and fire with them into the wounds. For though there be many things like in Lightning and discharging great Ordnance, yet they have no similitude either in matter or substance, but only in effects, whereby they shake, break in sunder and disperse the bodies which withstand them; For lightning and thunder do it by means of fire, & oft-times of a stone generated in them, which is therefore tearmed, a thunderbolt; but Ordnance by the Bullet carried by the force of the air, more violently driving and forcing it forwards. Neither if any should by more powerful arguments force me to yeeld that the matter of the lightning and shooting of Ordnance are alike, yet will I not therefore be forced to confess that Wounds made by Gunshot are combust. For according to *Pliny*, there are some lightnings which consisting of a most dry matter, do shattter in sunder all that withstands them, but do not burn at all; others which are of somewhat a more humid nature, burn no more than the former, but only black such things as they touch; Lastly, othersome of a more subtile and tenuous matter, whose nature (as *Seneca* saith) we must not doubt to be divine, if but for this reason, that they will melt gold & silver, not harming the purse; a sword, not hurting

The reason why wounds made by Gunshot look black.

The reasons of our adversaries refelled. *Quæst. nat. lib.* 2. *cap.* 49.

The stinking smell of Lightning.

*Lib.* 2. *cap.* 51. The wonderfull nature of some lightning.

ing the purse; a sword, not hurting the scabbard; the head of a Lance, not burning the wood, and shed wine not breaking the vessell. According to which decree I can grant, that these Lightnings which break in sunder, melt and dissipate, and performe other effects so full of admiration, are like in substance to the shot of great Ordnance; but not these which carry with them fire and flame.

A History.

In proofe whereof there comes into my mind the history of a certain Souldier, out of whose thigh I remember I drew forth a Bullet wrapped in the taffety of his breeches, which had not any sign of tearing or burning. Besides, I have seen many who not wounded, nor so much as touched, yet notwithstanding have with the very report and wind of a Cannon bullet, sliding close by their ears, faln down for dead, so that their members becomming livid and black, they have dyed by a Gangrene ensuing thereupon. These and such effects are like the effects of Lightnings which we lately mentioned, and yet they bear no sign nor mark of poison. From whence I dare now boldly conclude, that Wounds made by Gunshot are neither poisoned, nor burnt. But seeing the danger of such Wounds in these last civill wars hath been so great, universall and deadly to so many worthy personages and valiant men, what then may have been the cause thereof, if it were neither combustion, nor the venenate quality of the Wound? This must we therefore now insist upon and somewhat hardily explain. Those who have spent all their time in the learning and searching out the mysteries of Naturall Philosophy, would have all men think and beleeve, that the foure Elements have such mutuall sympathy, that they may be changed each into other; so that they not only undergoe the alterations of the first qualities which are heat, coldnesse, drynesse and moisture, but also the mutation of their proper substances by rarefaction and condensation. For thus the fire is frequently changed into air, the air into water, the water into air, and the water into earth; and on the contrary, the earth into water, the water into air, the air into fire; because these 4. first bodies have in their common matter enjoyed the contrary and fighting, yet first and principall qualities of all.

Why the wounds made by Gunshot some few years agone were so deadly.

The cause of the transmutation of the Elements.

Whereof we have an example in the * Ball-bellowes brought out of Germany, which are made of brasse, hollow and round; and have a very small hole in them, whereby the water is put in, and so put to the fire; the water by the action thereof is rarified into air, and so they send forth wind with a great noise, and blow strongly as soon as they grow throughly hot. You may try the same with Chesnuts, which cast whole and undivided into the fire, presently fly asunder with a great crack; because the watry and innate humidity turned into wind by the force of the fire, forcibly breaks his passage forth. For the air or wind raised from the water by rarifaction, requires a larger place, neither can it now be contained in the narrow filmes, or skins of the Chesnut, wherein it was formerly kept. Iust after the same manner Gunpouder being fiered, turnes into a far greater proportion of air, according to the truth of that Philosophicall proposition, which saith, Of one part of earth, there are made ten of water; of one of water, ten of air; and of one of air are made ten of fire. Now this fire not possible to be pent in the narrow space of the peice, wherein the pouder was formerly contained, endeavours to force its passage with violence, and so casts forth the Bullet lying in the way, yet so that it presently vanishes into air, and doth not accompany the Bullet to the mark, or object, which it batters, spoiles and breaks asunder. Yet the Bullet may drive the obvious air with such violence, that men are often sooner touched therewith than with the bullet, and dye by having their bones shattered and broken without any hurt on the flesh which covers them; which as we formerly noted, it hath common with Lightning. We find the like in Mines, when the pouder is once fiered, it removes & shakes even mountains of earth.

* These bellowes here mentioned by the Author, are Bals made of Brasse in form of a pear, with a very smal hole in their lesser ends: when you would fill them with water you must heat them very hot, and so the air which is contained in them wil be exceedingly rarified, which by putting them presently into water will be condensate as much, and so wil draw in the water to supply the place, *ne detur vacuum.* Then put them into the fire, & it again rarifying the water into air will make them yeeld a strong continued and forcible blast. The cause of the report and blow of a Cannon.

In the year of our Lord 1562. a quantity of this pouder which was not very great taking fire by accident in the Arcenall of Paris, caused such a tempest, that the whole City shooke therewith, but it quite overturned divers of the neighbouring houses, and shook off the tyles and broke the windowes of those which were further off; & to conclude, like a storme of Lightning it laid many here and there for dead, some lost their sight, others their hearing, and othersome had their limbs torn asunder as if they had been rent with wild horses; and all this was done by the only agitation of the air into which the fired Gunpouder was turned; Iust after the same manner as windes pent up in hollow places of the earth which want vents. For in seeking passage forth, they vehemently shake the sides of the Earth, and raging with a great noise about the cavities, they make all the surface thereof to tremble; so that by the various agitation one while up, another down, it overturnes or carries it to another place. For thus we have read that *Megara* and *Ægina* anciently most famous Cities of Greece were swallowed up and quite overturned by an earthquake; I omit the great blusterings of the windes striving in the cavities of the earth, which represent to such as heare them at some distance, the fierce assailing of Cities, the bellowing of Bullets, the horrid roarings of Lions, neither are they much unlike to the roaring reports of Cannons. These things being thus premised let us come to the thing we have in hand. Amongst things necessary for life, there is none causes greater changes in us than the air; which is continually drawn into the Bowells appointed by nature, and whether we sleep, wake, or what else soever we do, we continuall draw in, and breath it out. Through which occasion *Hippocrates* calls it Divine, for that breathing through this mundane Orbe, it embraces, nourishes, defends and keeps in quiet peace all things contained therein, friendly conspiring with the stars from whom a divine vertue is infused therein. For the air diversly changed and affected by the stars, doth in like manner produce various changes in these lower mundane bodies. And hence it is that Philosophers and Physitians do so seriously wish us to behold and consider the culture and habit of places, and constitution of the air, when they treat of preserving of health, or curing diseases. For in these the great power and dominion of the air is very apparent, as you may gather by the foure seasons of the year; for in summer the air being hot and dry, heats and dryes our bodies; but in winter it produceth in us the effects of winters qualities, that is, of cold and moisture; yet by such order and providence of nature, that although according to the varieties of seasons our bodies may be variously altered, yet shall they receive no detriment

A History. The cause of an Earthquake.

triment thereby, if so be that the seasons retain their seasonableness; from whence if they happen to digress, they raise and stir up great perturbations both in our bodies and minds; whose malice we can scarse shun, because they encompass us on every hand, and by the law of nature enter together with the air into the secret cabinets of our bodies both by occult and manifest passages. For who is he, that doth not by experience find both for the commodity and discommodity of his health, the various effects of winds, (wherewith the air is commixt) according as they blow from this or that Region, or quarter of the world. Wherefore seeing that the South wind is hot and moist; the North wind cold and dry; the East wind clear and fresh; the West wind cloudy; it is no doubt but that the air which we draw in by inspiration carries together therewith into the bowells the qualities of that wind which is then prevalent. When we read in *Hippocrates*, that changes of times, whether they happen by different winds, or vicissitude of seasons, chiefly bring diseases; For northerly winds do condense, and strengthen our bodies, and make them active, well coloured and daring, by resuscitating and vigorating the native heat. But southern winds resolve and moisten our bodies, make us heavy headed, dull the hearing, cause giddiness, and make the eyes and body less agile; as the Inhabitants of *Narbon* find to their great harme, who are otherwise ranked among the most active people of France. But if we would make a comparison of the seasons and constitutions of a year, by *Hippocrates* decree, Droughts are more wholesome and less deadly than Rains; I judg for that too much humidity is the mother of putrefaction, as you learn by these countries which are blown upon by a wind from Sea. For in these flesh which is kept for food, putrefies in the space of an houre; and such ulcers as in other places are easily and quickly healed, do there by the conflux and collection of matter become inveterate & contumacious. Therefore as when the seasons of the year successively fall out agreeable to their nature, & when each season is seasonable, then either we are not sick at all, or assuredly with less danger. So on the contrary the perfect constitution and health of our bodies becomes worse and decaies, when the seasons of the year are depraved and perverted in time and temper. Now seeing that these many years the four seasons of the year have wanted their seasonableness, the summer wanting his usuall heat, and the winter its cold, and all things by moisture and the dominion of the southern winds have been humid and languid, I think there is none so ignorant in naturall Philosophy and astrology, who will not think that the causes of the malignitie and contumacy of those diseases which have so long afflicted all France, are not to be attributed to the air and Heavens. For otherwise, whence have so many pestilent and contagious diseases tyrannized over so many people of every age, sex and condition? whence have so many catarrhes, coughs and heavinesses of the head, so many plurisies, tumors, small poxes, meazells, and itches not admitting of digestion and remedies prescribed by Art? Whence have we had so many venemous creatures, as Toads, Grashoppers, Caterpillars, Spiders, Waspes, Hornets, Beetles, Snailes, Vipers, Snakes, Lizards, Scorpions and Efts or Nutes, unless from excessive putrefaction which the humidity of the air, our native heat being liquid and dull, hath caused in us, and the whole kingdome of France? Hence also proceeds the infirmity of our native heat, and the corruption of the blood and humors whereof we consist, which the rainy Southwind hath caused with its sultry heat. Wherefore in these last years I have drawn little blood, which hath not presently shewed the corruption of its substance by the black or greenish colour, as I have diligently observed in all such as I have bled by the direction of Physitians, either for prevention of future, or cure of present diseases. Whence it comes to passe that the fleshy substance of our bodies could not but be faulty both in temper and consistence; seeing that the blood whence it is generated had drawn the seeds of corruption from the defiled air. Whence it fell out, that the Wounds which happend with losse of substance could be scarse healed or united, because of the depraved nature of the blood. For so the Wounds and ulcers of these which are troubled with the Dropsie, whose blood is more cold or wholly wateriish; so of Leprous persons, whose blood is corrupt, and lastly of all such as have their bodies replete with ill juice, or else are Cachectick, will not easily admit of cure. Yea assuredly if but the very part which is hurt swerve from its native temper, the Wound will not easily be cured. Therefore seeing all these things, both the putrefaction of the Air, and depraved humors of the body, and also the distemper of the affected parts conspired together to the destruction of the wounded, what marvail was it, if in these late civill warres, the Wounds which were for their quantitie small, for the condition of the wounded parts but little, have caused so many and grievous accidents and lastly death it self? Especially, seeing that the Air which encompasseth us, tainted with putrefaction corrupts and defiles the Wounds by inspiration and expiration, the body and humors being already disposed, or inclined to putrefaction. Now there came such a stink, which is a most assured sign of putrefaction, from these Wounds, when they were dressed, that such as stood by could scarse endure it, neither could this stink be attributed to the want of dressing, or fault of the Chirurgeon; for the Wounds of the Princes and Nobility stunk as ill as these of the common Souldiers. And the corruption was such, that if any chanced to be undrest for one day, which sometimes happened amongst such a multitude of wounded persons, the next day the Wound would be full of wormes. Besides also, which furthermore argues a great putrefaction of humors, many had abscesses in parts opposite to their Wounds, as in the left knee, when as the right shoulder was wounded; in the left arm, when as the right leg was hurt. Which I remember befell the King of *Navarre*, the Duke of *Nevers*, the Lord *Rendan* and divers others. For all men had nature so overcharged with abundance of vicious humors, that if it expelled not part thereof by impostumes to the habit of the body, it certainly otherwise disposed of it amongst the inner parts of the body; for in dissecting dead bodies, we observed that the Spleen, Liver, Lungs, and other Bowells were purulent, and hence it was that the patients by reason of vapours sent from them to the heart were troubled with continuall feavers. But the Liver and all the veinous parts being polluted, & so the generation of the laudable blood hindred, they languished for want of fitting nourishment. But when the Brain by vapours was drawn in to sympathize with the rest,

How the air becomes hurtfull.

*Aphor.* 17. *sect.* 3.

Flesh quickly putrefies in maritime places.

In what bodies ulcers and wounds are not easily cured.

An argument of great putrefaction of the humors.

rest, they were molested with Ravenings and Convulsions. Wherefore if any thing succeeded unprosperously in so great malignancy of wounds, the Chirurgeon was not to be blamed, for that it were a crime to fight against God and the Air, wherein the hidden scourges of the divine justice lye hid. Therefore if according to the mind of the great *Hippocrates*, who commands to bring all contused Wounds to suppuration, that so they may be healed, we indeavoured to cure with such medicins Wounds made with Gunshot, and therefore contused; who can rightly be angry with us, if we performed it not so well, by reason of these putrefactions, gangrenes, and mortifications which proceeded from the corrupt Air, for all that we used not only suppuratives, but were oft-times forced to use other medicins; so long turning aside from the cure of the disease, untill we had orecome the symptomes which much indanger the Patient, and customarily happen upon such Wounds, as also upon those which are made with a sword or any other kind of weapon; as shall plainly appear in the following treatise, to which it now seems high time that we betake our selves.

*All contused wounds must be brought to suppuration*

## CHAP. I. *A division of wounds drawn from the variety of the wounded parts, and the Bullets which wound.*

ALl Wounds which are made in mans body by Gunshot, whether simple or compound, are accompanied with contusion, dilaceration, distemper and swelling. I say, all these possess either the noble parts, or ignoble, the fleshy, nervous or bony, some whiles with rending and tearing asunder the larger vessells, sometimes without harming them. Now these Wounds are only superficiary, or else pierce deep and pass quite through the body. But there is also another division of these Wounds taken from the variety of the Bullets wherewith they are made. For some Bullets are bigger, some less, some between both, they are usually made of lead, yet sometimes of steel, iron, brass, tin, scarse any of Silver, much less of Gold. There arises no difference from their figure; for almost all kinds of Wounds of this nature are round. From these differences, the Chirurgeon must take his Indications what to do, and what medicins to apply. The first care must be, that he think not these horrid and malign symptoms, which usually happen upon these kinds of Wounds, to arise from combustion, or poyson carried with the Bullet into the wounded part, and that for these reasons we have formerly handled at large. But rather let him judg they proceed from the vehemency of the contusion, dilaceration and fracture, caused by the Bullets too violent entry into the nervous and bony bodies. For if at any time the Bullet shall only light upon the fleshy parts, the Wounds will be as easily cured, as any other Wound usually is, which is made with a contusing and round kind of weapon, as I have often found by frequent experience, whilst I have followed the wars, and performed the part of a Chirurgeon to many Noblemen and common Souldiers, according to the counsell of such Physitians as were there overseers of the cure.

*A division of wounds from the variety of the wounded parts.*

*From the difference of Bullets.*

*Wounds made by Gunshot are usually round.*

## CHAP. II. *Of the signs of Wounds made by Gunshot.*

WOunds made by Gunshot are known by their figure, which is usually round; by their colour, as when the native colour of the part decayes, and in stead thereof a livid, greenish, violet or other colour succeeds; by the feeling or sense of the stroke, when in the very instant of the receiving thereof, he feels a heavy sense as if some great stone, or piece of timber, or some such other weighty thing had faln upon it; by the small quantity of bloud which issues out thereat, for when the parts are contused, within some small while after the stroak they swell up, so that they will scarse admit a Tent, whence it is that the blood is stopped, which otherwise would flow forth of the orifice of the Wound; by heat, which happens either by the violentness of the motion, or the vehement impulsion of the air, or the attrition of the contused parts, as the flesh and nerves. Also you may conjecture that the Wounds have been made by Gunshot, if the bones shall be broken, and the splinters thereof by pricking the neighbouring bodies cause defluxion and inflammation. But the cause that the Bullet makes so great a contusion is, for that it enters the body not with any points or corners, but with its round and spherical body, which cannot penetrate but with mighty force; whence it cometh to pass that the wound looks black, & the adjacent parts livid: hence also proceed so many grievous symptoms, as pain, Defluxion, Inflammation, Apostumation, Convulsion, Phrensie, Palsie, Gangrene and mortification, whence lastly death ensues. Now the Wounds do often cast forth virulent and very much stinking filth, by reason of the great contusion, and the rending and tearing of the neighbouring particles. A great abundance of humors flow from the whole body, and fall down upon the affected parts, which the native heat thereof being diminished, forsakes, and presently an unnaturall heat seises upon it. Hither also tend an universall or particular repletion of ill humors, chiefly if the Wounds possess the nervous parts as the joints. Verily neither a Stag with his horn, nor a flint out of a sling can give so great a blow, or make so large a Wound, as a Leaden or Iron Bullet shot out of a Gun, as that which going with mighty violence, pierces the body like a Thunderbolt.

*Signs of wounds from their figure.*

*From their colour.*

*From the feeling the blow.*

*From the bleeding.*

*From the heat of the wound.*

*VVhence these wounds are so much contused.*

## CHAP. III. *How these Wounds must be ordered at the first dressing.*

THe Wound must forthwith be inlarged, unless the condition of the part resist, that so there may be free passage forth both for the *Sanies*, or matter, as also for such things as are farced, or otherwise contained therein; such as are pieces of their cloaths, bombast, linnen, paper, pieces of Mail or Armour, Bullets, Hail-shot, splinters of bones, bruised flesh and the like, all which must be plucked forth with as much celerity and gentleness as may be. For presently after the receiving of the Wound the pain and inflammation are not so great, as they will be within a short time after. This is the principall thing in performance of this work, that you place the Patient just in such a posture as he was in at the receiving of the Wound; for otherwise the various motion and turning

*Strange bodies must first be pulled forth.*

*The manner how to draw them forth.*

ing of the Muscles will either hinder or straiten the passage forth of the contained bodies. You shall if it be possible, search for these bodies with your finger, that so you may the more certainly and exactly perceive them. Yet if the bullet be entred somewhat deep in, then you shall search for it with a round and blunt probe, lest you put the Patient to pain; yet oftentimes you shall scarce by this means find the Bullet. As it happened to the Marshall of *Brissac* in the siege of *Parpignan*, who was wounded in his right shoulder with a Bullet, which the Chirurgeons thought to have entered into the capacity of his body. But I, wishing the Patient to stand just in the same manner as he did when he received the Wound, found at length the place where the Bullet lay, by gently pressing with my fingers, the parts near the Wound, and the rest which I suspected; as also by the swelling, hardness, pain and blackness of the part, which was in the lower part of the shoulder near unto the eight or ninth spondill of the back. Wherefore the Bullet being taken forth by making incision in the place, the Wound was quickly healed, and the Gentleman recovered. You shall observe this, and rather beleeve the judgment of your fingers, than of your Probe.

## CHAP. IIII. *A description of fit Instruments to draw forth Bullets and other strange bodies.*

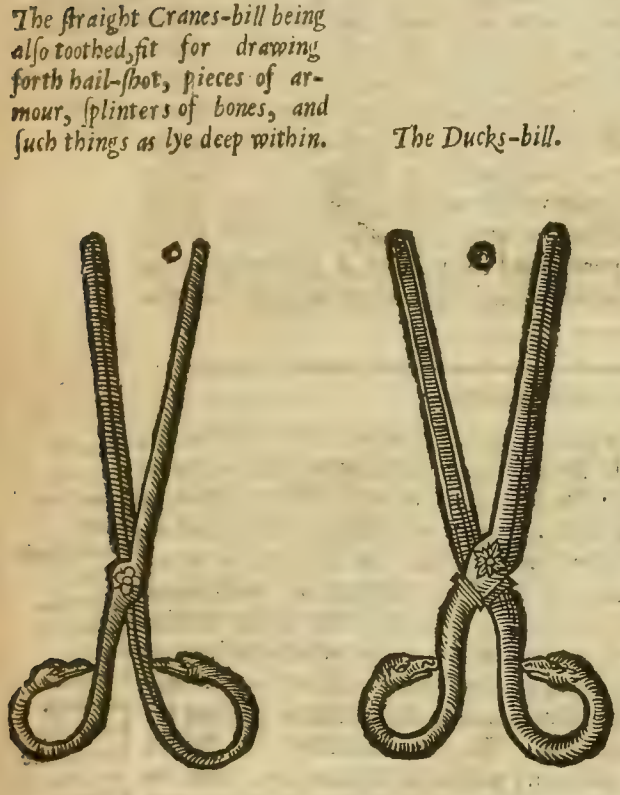
BOth the magnitude and figure of Instruments fit for drawing forth of Bullets and other strange bodies, are various according to the diversity of the incident occasions. For some are toothed, others smooth, others of another figure and bigness; of all which sorts the Chirurgeon must have divers in a readiness, that he may fit them to the bodies and Wound, and not the Wounds and bodies to his Instruments.

*The Delineation of such like Instruments.*

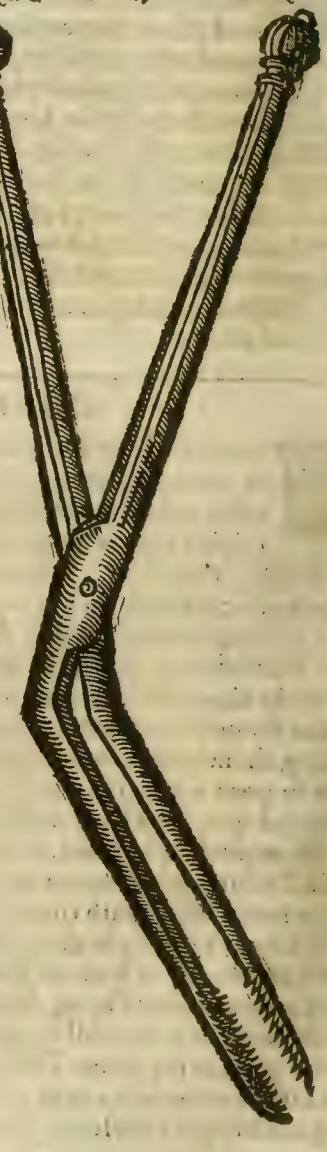
*The crooked Cranes-bill, with teeth like a Saw.*

*The straight Cranes-bill being also toothed, fit for drawing forth hail-shot, pieces of armour, splinters of bones, and such things as lye deep within.*

*The Ducks-bill.*

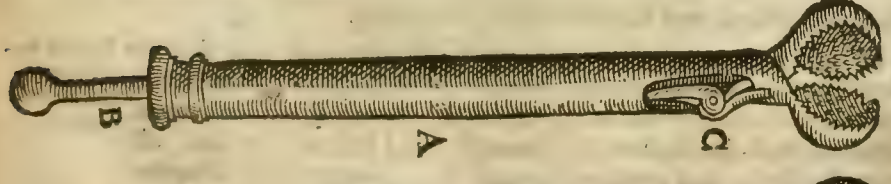


*This Ducks-bill hath a large round and toothed cavity in the end, for so it more easily taketh hold of the Bullet when it lies amongst much Flesh.*

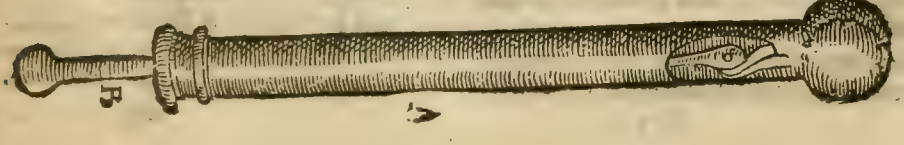


*A toothed Crowes-Bill.*

*Another Instrument fit for drawing forth of Bullets, which may be tearmed a Catch-Bullet.*

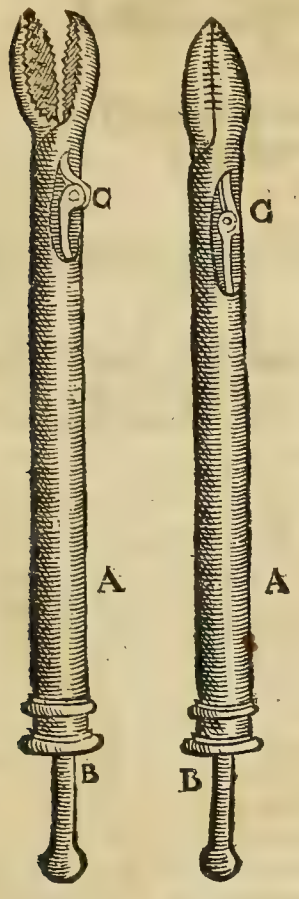



A. *Shews the Trunk.*
B. *Shews the rod, or string which opens and shuts the joint.*
C. *The joint.*

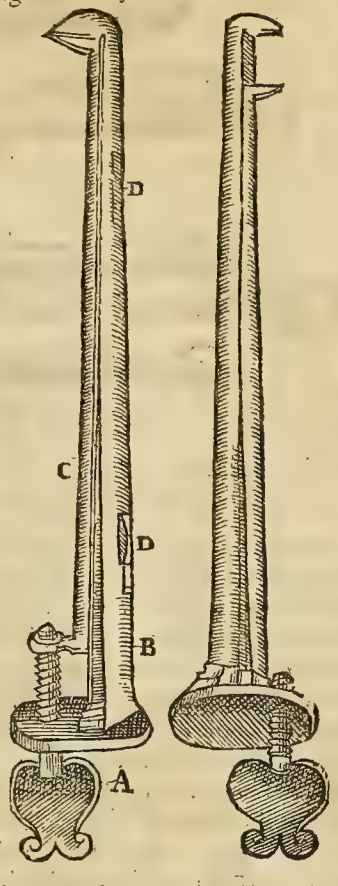



*Another*

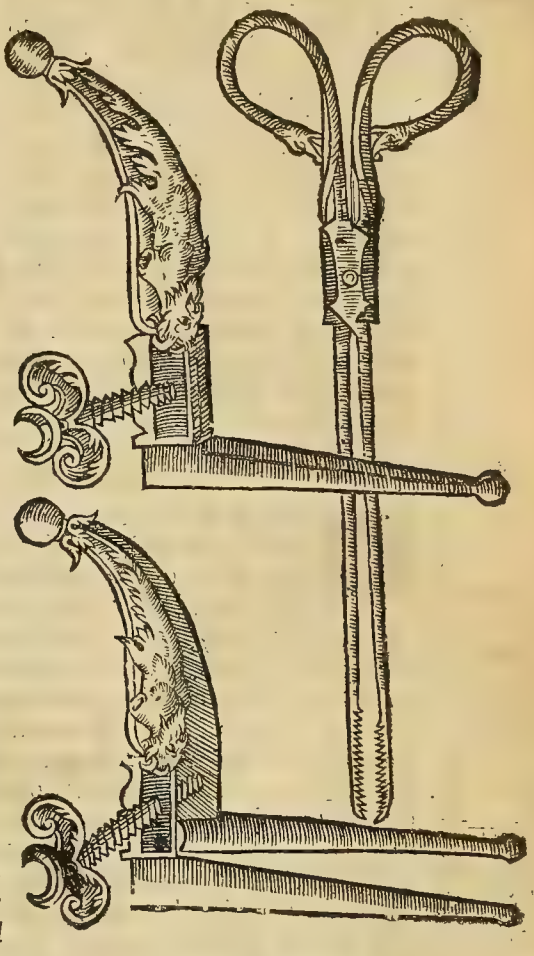
*Another Catch-Bullet called a Lizards-nose, made for drawing out of bullets which are somewhat flatted, by striking upon a bone.*




*The Parrots-beak is made for drawing forth pieces of mail thrust into the flesh, or bones; and this is the figure thereof.*



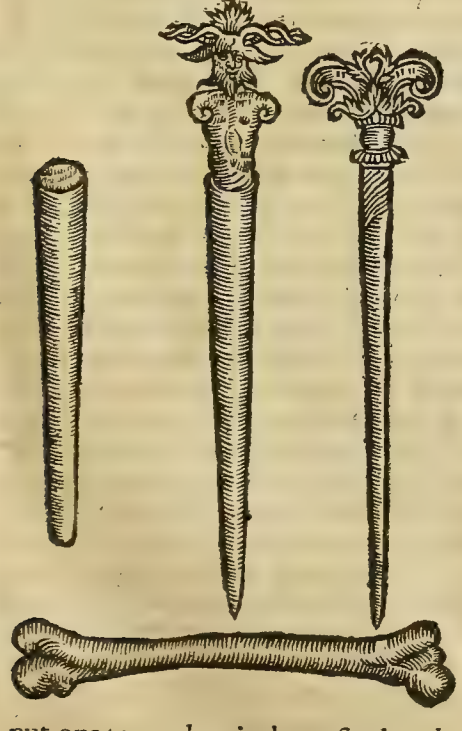

*The Swans bill opens with a screw; you may with this dilate the Wounds, and so put in a straight Cranes-bill, as pincers to pluck forth strange bodies. The figure of both are here expresst.*



A. *Shews the screw pin.* B. *The hollowed part which receives, the round part noted with.* C. *Which is opened and and shut by the screw.* D. D. *Falls, or stayes, which govern the running branch.*

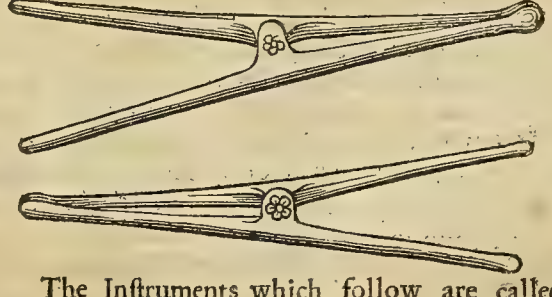
But if these strange bodies, especially bullets and hail-shot, be not too deep in the Wound, they may be taken forth with your Levatory, or else by the help of these Gimblets. These Gimblets are screwed into their pipes, or canes, and enter with their screwed points into the Bullets, if that they be of Lead or Tin, and of no harder metall; and so being fastened in them, bring them out with them.

*The figure of the Gimblet with his pipe or cane.*



Besides the Swans-bill which we lately mentioned, there are also other instruments fit to dilate and open the Wounds, therefore called Dilaters, by whose help the Wound may be held open, that so the hidden bodies may be seen; for when you press together the two ends of this Instrument, the other two open and dilate themselves. You may also use them in dilating divers other parts of the body, as the Nostrils, Fundament, and such like.

*Dilaters.*

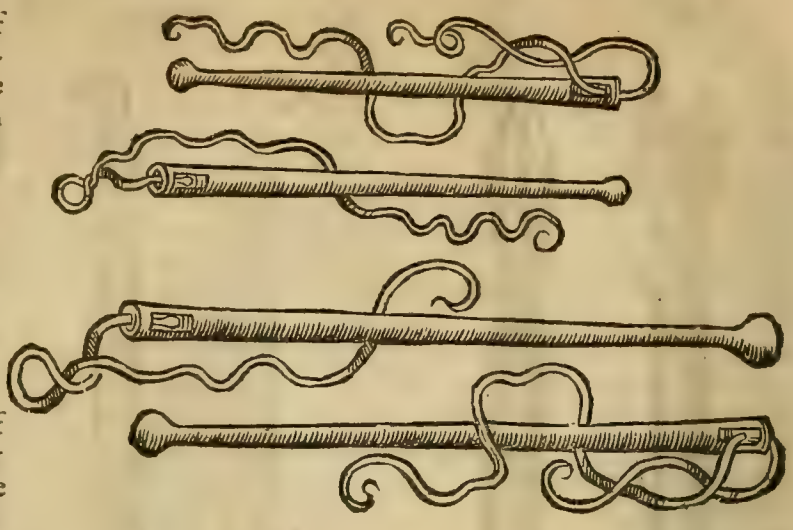


The Instruments which follow are called Seton needles, or Probes; whose use is, to draw through a flamula, so to keep the Wound open, that you may the better take forth any strange body. Besides also we use the same needles to search, or as it were to sound the deepness of the Wounds, and to find out the Bullets. For they cannot put one to much pain because they have smooth and round ends. So also all Probes wherewith we

What probes fit to search the se wounds.

search for Bullets, must have somewhat large, smooth and round ends. For seeing that the verges of the Wound meet together presently after the hurt, if the Probes be too smal or slender, they will stick in the inequality of the flesh, neither will they be able to come to the Bullet. But if they be sharp & pointed, they will cause and renew the pain by pricking the flesh they meet withall, & so hinder your intention of finding the Bullet; Now you must be furnished with these instruments of a different length, according to the various thickness of the parts; for you cannot put any through the thigh but such as are of good length.

*Probes for to put flamulaes through a Wound withall.*



## CHAP. IX. *What dressing must first be used, after the strange bodies are pluckt or drawn out of the Wound.*

WHen the strange bodies are drawn or pluckt out of the Wound, by these means we have formerly recited, the chief of the cure must be to heal the contusion, and amend the distemper of the air if it be hot and moist, that is, subject to putrefaction. This shall be done by medicins taken inwardly, applied outwardly, and put into the Wound. Things to be inwardly used in diet and Pharmacy I leave to the judgment of learned Physitians; for the particular and topick medicins, (unless from the present constitution of the air, the condition of the wounded part, or from some other cause there be danger of a Gangrene) you must use suppuratives, as you usually do in contusions; such as are oil of Whelpes and that which we call a digestive; you must chiefly forbear suppuratives, when as the wounded part is of a nervous nature. For all nervous parts require dryer medicins than fleshy, as we have formerly delivered speaking of Wounds of the joints; wherefore in Wounds of the joints and nervous parts you shall use more venice Turpentine than oil. *Laurentius Iobertus* the Kings Physitian & Chancellour of the University of Mompelier, in a treatise which he writ of Wounds made with Gunshot, forbids the use of Escharoticks both actuall and potentiall, in these Wounds, if simple; for that they induce pain, inflammation, a feaver, Gangrene and other deadly symptomes. Besides also an eschar will hinder suppuration, which is to be desired in this kind of Wounds, that so the contused flesh may be severed from the sound, lest it be drawn to putrefaction by contagion. Which easily happens when an Eschar is drawn, as a bar over it, for then the excrementitious humor remains longer in the part, and the putredinous vapours hindred from passing forth, are encreased, and carryed from the lesser vessels to the bigger, and so over all the body. Wherefore, when you suspect putrefaction, letting alone suppuratives, use in the first place such things as resist putrefaction, as this following ointment. ℞ *pulver. alumin. rochæ, viridis æris, vitrioli romani, mellis rosat. an.* ℥ij. *aceti boni quantum sufficit, bulliant omnia simul secundum artem, & fiat medicamentum ad formam mellis.* This by reason of the heat and subtlety of the substance, hath a faculty to induce and attenuate the humors, as also to call forth the native heat drawn in & dissipated by the violent and forcible entrance of the Bullet into the body; furthermore also it corrects the venemous contagion of the virulent humor. Now this medicine shall be used, dissolved in Venegar or *aqua vitæ*, and be put into the Wound with tents, or pledgets. The tents which shall be used at the first dressing must be somewhat long and thick, that by dilating the Wound, they may make way for application of other remedies; otherwise you may make injection with a syringe, that so it may penetrate the more powerfully. But this described *Ægyptiacum* shal be tempered according to the condition of the affected parts, for the nervous parts will be offended with it as being too acrid; but it may be qualified by admixture of oil of Turpentine & Saint Iohn-wort. Also we may well be without this *Ægyptiacum* when there is no such pestilent constitution of the air, as was seen in the late Civill wars. After the use of *Ægyptiacum* you shall with emollient & lenitive medicins procure the falling away of the Eschar, & such a medicine is this following oil, being somewhat more than warm. ℞ *Olei violati lib.* iiij. *in quibus coquantur catelli duo nuper nati, usque ad dissolutionem ossium, addendo vermium terrestrium, ut decet præparatorum,* ℔ j. *coquantur simul lento igne, deinde fiat expressio ad usum, addendo terebinth. venet.* ℥iij. *aquæ vitæ* ℥j. This oil hath a wonderfull force to asswage pain, to bring the Wound to suppuration, & cause the falling away of the Eschar. This ensuing oil is made more easily. ℞ *olei seminis lini, & lilior. an.* ℥iij. *unguent. basilic.* ℥j. *liquefiant simul & fiat medicamentum*; put of this a sufficient quantity into the Wound; for this being applyed indifferent hot, hath power to asswage Pain, to soften and humect the orifice of the wound, and help forwards suppuration, which is the true manner of curing these kind of Wounds; according to the rule of *Hippocrates*, which wishes every contused wound to be presently brought to suppuration, for so it will be lesse subject to a Phlegmon; and besides, all the rent & bruised flesh must putrefie, dissolve and turn to quitture, that new and good flesh may be generated in stead thereof. *Laurentius Iaubertus* much commends this following medicine, of whose efficacy, as yet, I have made no triall. ℞ *pulver. mercur. bis calcinati,* ℥j. *adipis porci recentis, vel butyri recentis,* ℥viij. *Camphoræ in aqua vitæ dissolutæ.* ℥ij. *misce omnia simul, addendo tantillum olei liliorum, aut lini.* Experience taught him, and reason also shewes, that this kind of remedy is very commendable; for the powder of Mercury, if mixed with

A Caution in the use of suppurarives.

Why Escharoticks must be eschewed in these kinds, if they be simple.

Howan Eschar may cause putrefaction.

The discription of an *Ægyptiacum.*

How and when to temper this *Ægyptiacum.*

The oil of VVhelpes a digestive, anodyne, and fit medicine to procure the falling away of an Eschar. *Lib. de ulcer.*

The faculties of the powder of Mercury.

a grosse and humecting matter, doth in a short space turn the bruised flesh into *pus*, without causing any great pain. For the Camphire, whether it be hot or cold, in temper, it much conduces to that purpose, by reason of the subtlety of the parts, whereof it consists. For by means of this quality the medicines enter with more facility into the affected bodies, and perform their parts; besides also Camphire resists putrefaction. Some drop into the Wound *aqua vitæ*, wherein they have dissolved some calcined vitriol. Which kind of remedy is not suppurative, but yet much resists putrefaction, so that we may use it with good success, when the weather is hot, moist, and foggie. But when the Wound is made very neer at hand, it cannot but be burnt by the flame of the powder; in which remedies used for burns, will be usefull, not omiting such as are fit for contusions. But for these parts which lye next the Wound, you shall not, unless at the first dressing, apply refrigerating and astringent things, but rather emollient and suppurative. For those things which have a refrigerating faculty, weaken the part, and hinder suppuration. For astringents constipate the skin, which is the cause, that the putrid vapours shut up and hindred from transpiration and passage forth, a gangrene and mortification easily seise upon the part. But if the contusion be great and diffuse it self more largely over the flesh, the part must be much scarified; that so the contused and concreat blood, and therefore subject to putrefaction, may be evacuated. But for these parts, which somewhat further distant from the Wound encompasse the contused flesh, they require refrigerating and strengthening medicins, so to hinder the falling down and setling of the humor in that part which is this ensuing medicine. ℞ *pul. boli. armen. sanguin. Dracon. Myrrhæ, an.* ℥j. *succi solan. sempervivi, portulac. an.* ℥j ß. *album* iiij. *ovorum. oxyrhodin. quantum sufficit; fiat linimentum, ut decet.* You may use this, & the like untill the suspected symptome be past fear. Neither must you have less care, of binding up and rolling the part, than of your medicins; for it doth not a little conduce to the cure, to bind it so fitly up as it may be without pain. The Wound at the beginning of the cure, must be dressed but once in 24 houres, that is, untill the Wound come to suppuration; but when the quitture begins to flow from it, and consequently the pain and feaver are encreased, it shall be dresst twice a day, that is, every twelve houres. And when the quitture flowes more abundantly than usuall, so that the collection thereof is very troublesome to the Patient, it will be requisite to dresse it every 8 houres; that is, thrice a day. Now when as this abundant efflux is somewhat slaked, and begins to decrease, it will suffice to dresse it twice a day. But when the ulcer is filled with flesh, and consequently casts forth but little matter, it will serve to dresse it once a day, as you did at the first.

The force of calcined vitriol.

How wounds made by Gunshot may be combust.

Scarification.

An Astringent repelling medicine.

The binding up.

How oft the wound must be dresst in a day.

## CHAP. VI. *How you shall order it at the second dressing.*

AT the second and following dressings, unless you suspect putrefaction, and a Gangrene, you shall only put into the Wound some of the oils formerly described, adding to them the yolks of some egs and a little saffron; and use this medicin, untill the Wound come to perfect suppuration. Here you must note this, that these kinds of Wounds are longer before they come to suppuration, than other Wounds made by any other sort of weapon; both for that the bullet, as also the air which it violently carries before it, by much bruising the flesh, on every side, dissipates the native heat, and exhausts the spirits of the part. Which things hinder digestion, and often cause the matter to stink, as also many other pernicious symptomes. Yet most usually *pus* or quitture appears within three or four dayes, sooner and later according to the various complexion, and temperament of the Patients bodies, and the condition of the ambient air in heat and cold. Then by little and little you must come to detersives, adding to the former medicin some Turpentine washed in Rose, Barly, or some other such like water, which may wash away the biting thereof. If the incompassing air be very cold, you may to good purpose, add some *aqua vitæ*; for by *Galens* prescript, we must not use hot medicins in winter, & less hot in summer. Then in the next place use detersives, as ℞. *aquæ decoctionis hordei quantum sufficit, succi plantaginis, apii, agrimon. centaurei minoris, an.* ℥j. *bulliant omnia simul; in fine decoctionis adde terebinthinæ venetæ* ℥ iij. *mellis rosat.* ℥ ij. *farin. hordei* ℥ iij. *croci* ℈ j. Let them be all well mixed together and make a Mundificative of an indifferent consistence. Or ℞ *succi clymeni, plantag. absinth. apii, an.* ℥ ij. *tereb. venet.* ℥ iiij. *syrup. absinth. & mellis rosat. an.* ℥ ij. *bulliant omnia secundum artem, postea colentur, in colatura adde pulver. aloes, mastiches, Ireos Florent. far. hord. an.* ℥ j. *fiat Mundificativum ad usum dictum.* Or else ℞. *terebinth. venet. lotæ in aq. ros.* ℥ v. *olei ros.* ℥ j. *mellis ros.* ℥ iij. *myrrhæ, aloes, mastich. aristoloch. rotundæ, an.* ℥ i ß. *far. hord.* ℥ iij. *misce.* Make a Mundificative, which you may put into the Wound with tents, but such as are neither too long, nor thick, lest they hinder the evacuation of the quitture and vapours, whence the wounded part will be troubled with erosion, pain, defluxion, inflammation, abscess, putrefaction; all which severally of themselves, as also by infecting the noble parts, are troublesome both to the part affected, as also to the whole body besides. Wherefore you shall put into the Wound no tents, unless small ones, and of an indifferent consistence; lest (as I said) you hinder the passing forth of the matter, or by their hard pressing of the part, cause pain, and so draw on malign symptomes. But seeing tents are used both to keep open a Wound so long, untill all the strange bodies be taken forth, as also to carry the medicins, wherewithall they are anointed: even to the bottom of the Wound. Now if the Wound be sinuous and deep, that so the medicin cannot by that means arrive at the bottom and all the parts thereof, you must do your business by injections made of the following decoction. ℞. *aq. hord. lib.* 4. *agrimon. centaur. minor. pimpinellæ, absinth. plantag. M.* ß. *rad. aristoloch. rotund.* ℥ ß. *fiat decoctio ad lib.* j. *in colatura expressa dissolve aloes hepaticæ,* ℥ iij. *mellis ros.* ℥ ij. *bulliant modicum.* Inject some of this decoction three or four times into the Wound, as often as you dress the Patient; and if this shall not be sufficient to clense the filth, and wast the spongious, putrid and dead flesh, you shall dissolve therein as much *Ægyptiacum* as you shall think fit for the present necessity; but commonly you shall dissolve an ounce of *Ægyptiacum* in a pint of the decoction. Verily *Ægyptiacum* doth powerfully consume the proud flesh which lies in the capacity

Why wounds made by Gunshot are so long before they come to suppuration.

Why Turpentine must be washed. *Gal. lib.* 3. *Meth.*

A detergent medicin.

Why tents must be neither too long nor thick.

When you must use injections.

An Injection.

The quantity of *Ægyptiacum* to be used in an injection.

pacity of the Wound; besides also it only works upon such kind of flesh. For this purpose I have also made triall of the powder of Mercury, and burnt Alum equally mixed together, and found them very powerfull, even almost as sublimate, or Arsenick, (but that these cause not such pain in their operation.) I certainly much wonder at the largeness of the Eschar which arises by the aspersion of these powders. Many Practitioners would have a great quantity of the injection to be left in the cavities of sinuous ulcers, or Wounds; which thing I could never allow of. For this contained humor causeth an unnatural tension in these parts, and taints them with superfluous moisture, whereby the regeneration of flesh is hindered; for that every ulcer as it is an ulcer, requires to be dryed, in *Hippocrates* opinion. Many also offend in the too frequent use of Tents; for as they change them every houre, they touch the sides of the Wound, cause pain, and renew other malign symptomes; wherefore such ulcers as cast forth more abundance of matter, I could wish rather to be dressed with hollow tents, like those I formerly described to be put into Wounds of the Chest. You shall also press a linnen boulster to the bottom of the Wound, that so the parts themselves may be mutually condensed by that pressure and the quitture thrust forth; neither will it be amiss to let this boulster have a large hole fitted to the orifice of the Wound and end of the hollow tent and pipe, that so you may apply a spunge for to receive the quitture, for so the matter will be more speedily evacuated and spent, especially if it be bound up with an expulsive ligature, beginning at the bottom of the ulcer, and so rapping it up to the top. All the boulsters and rowlers, which shall be applyed to these kinds of Wounds, shall be dipped in Oxycrate or red wine, so to strengthen the part, and hinder defluxion. But you must have a speciall care, that you do not bind the Wound too hard, for hence will arise pain, hindering the passage forth of the putredinous vapours and excrements, which the contused flesh casts forth; and also fear of an *Atrophia*, or want of nourishment, the alimentary juyces being hindered from coming to the part.

VVhy none of the injection must be left in the wound.

Hollow tents or pipes.

The manner of binding up the wound.

## CHAP. VII. *By what means strange bodies, left in at the first dressing, may be drawn forth.*

IT divers times happens, that certain splinters of bones, broken and shattered asunder by the violence of the stroak, cannot be pulled forth at the first dressing, for that they either do not yeeld or fall away, or else cannot be found by the formerly described instruments. For which purpose this is an approved medicin to draw forth that which is left behind. ℞ *radic. Ireos Floren. panac. & cappar. an.* ℥ iij. *aristoloch. rotund. mannæ, thuris, an.* ʒ j. *in pollinem redacta incorporentur cum melle rosar. & terebinth. venet. an.* ℥ ij. or ℞ *resin. pini siccæ* ℥ iij. *pumicis combusti & extincti in vino albo, radic. Ireos, aristolochiæ, an.* ʒ ß. *thuris* ʒ j. *squamæ æris,* ʒ ij. *in pollinem rediganur, incorporentur cum melle rosato, fiat medicamentum.*

Two causes that make strange bodies hard to be taken forth.

## CHAP. VIII. *Of Indications to be observed in this kind of Wounds.*

THe ulcer being clensed and purged, and all strange bodies taken forth; natures indeavours to regenerate flesh, and cicatrize it, must be helped forwards with convenient remedies, both taken inwardly, and applyed outwardly. To which things we may be easily and safely carryed by indications drawn, first from the essence of the disease, then from the cause; if as yet present it nourish the disease For that which *Galen* sayes, *Lib. 3. Meth.* that no indication may be taken from the primitive cause and time; must be understood of the time past, and the cause which is absent. And then from the principal times of the disease, the beginning, increase, state, and declination; for each of these four require their remedies. Others are taken from the temperament of the Patient, so that no Chirurgeon need doubt, that some medicins are fit for cholerick, othersome for phlegmatick bodies. Hither refer the indication taken from the age of the Patient; also it is drawn from his diet, for no man must prescribe any slender diet to one who is alwayes feeding, as to him who is accustomed to eat once, or twice a day. Hence it is that a diet consisting only of *Panada's* is more fit for *Italians* than for *French* men; for we must give somewhat to custome, which is as it were another nature. Vocations and dayly exercises, are referred to diet, for other things befit Husbandmen & labourers, whose flesh is dense and skin hardened by much labour, than idle and delicate persons. But of all other, have diligent regard of that indication which is drawn from the strength of the Patient; for we must presently, (all else being neglected) succor the fainting, or decaying strength; wherefore if it be needfull to cut off a member that is putrefied, the operation must be deferred if the strength of the Patient be so dejected, that he cannot have it performed without manifest danger of his life. Also indication may be drawn from the incompassing air, under which also is comprehended that, which is taken from the season of the yeer, region, the state of the air and soil, and the particular condition of the present and lately by-past time. Hence it is we read in *Guido*, that Wounds of the head are cured with far more difficulty at *Paris*, than at *Avignion*; where notwithstanding on the contrary, the Wounds of the legs are cured with more trouble, than at *Paris*; the cause is, the air is cold and moist at *Paris*; which constitution seeing it is hurtfull to the brain and head, it cannot, but must be offensive to the Wounds of these parts. But the heat of the ambient air at *Avignion*, attenuates and dissolves the humors, and makes them flow from above downwards. But if any object that experience contradicts this opinion of *Guido*, and say, that Wounds of the head are more frequently deadly in hot countries; let him understand that this must not be attributed to the manifest and naturall heat of the air; but to a certain malign and venenate humor, or vapor dispersed through the air, and raised out of the Seas; as you may easily observe in those places of *France* and *Italy* which border upon the Mediterranean Sea. An indication may also be drawn from the peculiar temper of the wounded parts, for the musculous parts must be dressed after one, and the bony parts after another manuer. The different sense of the parts, indicates and requires the

The Indication which is drawn from the strength of the Patient is the chiefest of all other.

VVhy wounds of the head at *Paris*, and of the legs at *Avignion* are hard to be cured.

the like variety of remedies; for you shall not apply so acrid medicins to the Nerves and Tendons, as to the ligaments which are destitute of sense. The like reason also for the dignity and function of the parts needfull for the preservation of life; for oft-times wounds of the brain, or of some other of the naturall & vitall parts, for this very reason that they are defixed in these parts, divert the whole manner of the cure, which is usually and generally performed in wounds. Neither that without good cause, for oft-times from the condition of the parts, we may certainly pronounce the whole success of the disease; for wounds which penetrate into the ventricles of the brain, into the heart, the large vessels, the chest, the nervous parts of the midriffe, the liver, ventricle, small guts, bladder, if somewhat large are deadly; as also these which light upon a joynt in a body repleat with il humors, as we have formerly noted. Neither must you neglect that indication which is drawn from the situation of the part, and the commerce it hath with the adjacent parts, or from the figure thereof; seeing that *Galen* himself would not have it neglected. But we must consider in taking these forementioned Indications, whether there be a composition, or complication of the diseases; for as there is one and that a simple indication, of one and that a simple disease, so must the indication be various of a compound and complicate disease. But there is observed to be a triple composition, or complication of affects besides nature; for either a disease is compounded with a disease, as a wound, or a phlegmon with a fracture of a bone; or a disease with a cause, as an ulcer with a defluxion; or a disease with a symptome, as a wound with pain, or bleeding. It sometimes comes to pass, that these three, the disease, cause, and symptome, concur in one case or affect. In artificially handling of which, we must follow *Galens* counsell, who wishes in complicated and compounded affects, that we resist the more urgent; then let us withstand the cause of the disease, and lastly that affect, without which the rest cannot be cured. Which counsell must well be observed; for in this composure of affects, which distracts the Emperick; but on the contrary, the rationall Physitian hath a way prescribed in a few & these excellent words, which if he follow in his order of cure, he can scarse miss to heal the Patient. Symptomes truly as they are symptomes, yeeld no indication of curing, neither change the order of the cure; for when the disease is healed, the symptome vanishes, as that which follows the disease, as a shadow follows the body. But symptomes do oftentimes so urge and press, that perverting the whole order of the cure, we are forced to resist them in the first place, as those which would otherwise increase the disease. Now al the formerly mentioned indications may be drawn to two heads; the first is, to restore the part to its native temper; the other is, that the blood offend not either in quantity or quality; for when those two are present, there is nothing which may hinder the repletion, or union of wounds nor ulcers.

An indication to be drawn from the quick and dull sense of the wounded part.

*Gal. lib. 7. Meth. & 2. ad Glauc.*

*Gal. lib. 7. Meth.*

How and when we must take indication of curing from a symptome.

## CHAP. IX. *What remains for the Chirurgeon to do in this kind of Wounds.*

THe Chirurgeon must first of all be skilfull and labour to asswage pain, hinder defluxions, prescribe a diet in these six things we call not naturall, forbidding the use of hot & acrid things, as also of wine; for such attenuateth humors and make them more apt for defluxion. Therefore at the first let his diet be slender, that so the course of the humors may be diverted from the affected part; for the stomach being empty and not well filled, draws from the parts about it, whereby it consequently follows, that the utmost and remotest parts are at the length evacuated; which is the cause, that such as are wounded, must keep so spare a diet for the next dayes following. Venery is very pernicious, for that it inflames the spirits and humors far beyond other motions; whereby it happens that the humors waxing hot, are too plentifully carried to the wounded and over heated part. The bleeding must not be stanched presently upon receiving of the wound, for by the more plentifull efflux thereof the part is freed from danger of inflammation and fulness. Wherefore if the wound bleed not sufficiently at the first, you shall the next day open a vein, and take blood according to the strength and plenitude of the Patient; for there usually flows no great store of blood from wounds of this nature; for that by the greatness of the contusion and vehemency of the moved air, the spirits are forced in, as also I have observed in those who have one of their limbs taken away with a Cannon bullet. For in the time when the wound is received, there flows no great quantity of blood, although there be large veins and arteries torn in sunder thereby. But on the 4, 5, 6. or some more dayes after, the blood flows in greater abundance, and with more violence, the native heat and spirits returning into the part. The belly must be so qualified, that he may have at the least one stool a day, either by nature, or Art; and if by Art, than rather with a Clyster than purging medicins taken by the mouth, for that the agitation of humors, chiefly in the first dayes of the disease, is to be suspected, lest we increase the defluxion falling down upon the wounded part. Yet *Galen* writes that both the evacuations are here needfull, that is, blood-letting and purging; though the Patient be neither plethorick, nor repleat with il humors. But the care hereof must be committed to the judgment of the learned Physitian; pain, if joyned with inflamation shall be mitigated, by anointing the parts neer unto the wound with *unguent. nutritum*, compосed with the juyce of Plantain, Housleek, Nightshade, and the like. *Vnguentum Diacalcitheos* described by *Galen* dissolved with vinegar, oil of Poppyes and Roses is of no less efficacy; nor *unguent. de bolo*, nor divers other things of the same faculty, though properly no anodynes, as those which are not hot and moist in the first degree, but rather cold, but yet not so as to have any narcotick faculty. Now these forementioned things asswage pain for that they correct the hot distemper, and stay the acrid and cholerick defluxions, whose violence is more than cold. After the use of repercussives, it will be good to apply this following cataplasm. ℞. *Micæ panis infusæ in lactie vaccino* ℔ j ʃ. *bulliant parum addendo olei violacei, & rosar. an.* ʒ iij. *vitellos ovorum nu.* iiij. *pulver. rosar. rub. flor. chamem. & meliloti, an.* ʒ ij. *farin. fabar. & hordei an.* ʒ j. *misce, fiat cataplasma secundum artem.* Also in this case you may easily make a medicin, of bread crums boyled in Oxycrate and oil of Roses. The cure of Tumors if any associate the wound, may be

Why such as are wounded must keep a slender diet.

Why we must open a vein in such as are wounded by Gunshot.

*Gal. Lib. 4. Meth. cap. 6.*

*Gal. Lib. 2. de comp. Med. secund. gen. c. 6.*

An anodine and ripening Cataplasm.

be found in their proper place. Natures motion, whether to ſuppuration, or any ſuch thing, muſt ſtill be obſerved, and helped by the Phyſitian and Chirurgeon, as the miniſters and ſervants thereof.

## CHAP. X. *Of Bullets which remain in the body, for a long time after the Wound is healed up.*

Why Leaden Bullets lye in the body ſo many years without doing any harm.

LEaden Bullets lye in ſome parts of the body ſome whiles ſeaven, eight or more years, ſo that they neither hinder the agglutination of the Wound, neither doth any other ſymptome happen thereupon, as I have divers times obſerved; untill at length by the ſtrength of nature forcing them; and their proper weightineſs bearing them downwards, they ſhew themſelves in ſome lower part, by their ſwelling or bunching forth, and ſo muſt be taken forth by the hand of the Chirurgeon. For they ſay lead hath a certain ſympathy and familiarity with mans body, chiefly the fleſhy parts thereof. Wherefore it neither putrefies it ſelf, nor cauſeth the fleſh to putrefie; beſides it hath an excellent faculty in cicatrizing old ulcers. But bullets of ſtone, iron and of any other metall, are of another nature, for they cannot remain any long time in the body without hurt; for Iron will grow ruſty, and ſo corrode the neighbouring bodies, and bring other malign ſymptomes. Yet a Leaden bullet cannot remain any long time in nervous, or noble parts without danger.

## CHAP. XI. *How to correct the conſtitution of the air, ſo that the noble parts may be ſtrengthened, and the whole body beſides.*

Cordialls to ſtrengthen the noble parts.

BUt becauſe as we have formerly told you, there are ſome times wherein even ſmall Wounds made by Gunſhot prove deadly, not by their own fault, but the fault of the air; therefore alſo the Chirurgeon muſt have this care, that he correct the aire with all diligence, & reduce it to a certain quality and moderation of ſubſtance, and ſtrengthen the noble parts and whole body beſides, which may be performed by the following medicins, which are to be taken inwardly and applyed outwardly. In the morning three houres before meat let the Patient take ſome certain quantity as the Phyſitian ſhall think fit of the electuary *Diarrhodon Abbatis*, or *Aromaticum roſatum*, *triaſantalon*, *biamoſchum*, *Lætificans Galeni*, or ſome ſuch other like. And you ſhall apply ſome ſuch Epitheme as is here deſcribed to the heart and Liver.

A cordiall Epithem.

℞ *aquæ roſar.* ℥iiij, *aquæ bugloſſæ*, *aceti boni*, *an.* ℥ij. *coriandri præparati* ℥ß. *caryophill. cortic. citri an.* ℥j. *ſant. rub.* ℥ß. *coralli utriuſque* ℥ß. *camphoræ* ℈j. *croci* ℈ß. *pulver. diarrhod. abbat.* ʒij. *theriacæ & Mithridatii an.* ℥ß. *pul. flo. chamæm. & melil. an.* ℥iij. *miſce, fiat epithema.* Let it be applyed warm by dipping a ſcarlet cloath therein. You ſhall frequently put odoriferous and refrigerating things to the Patients noſe, to ſtrengthen the animall faculty, as; ℞ *aquæ roſar. & aceti boni an.* ℥iij. *caryophyllorum*, *nucis moſchat. cinamomi conquaſſatorum, & Theriacæ Galeni*, *an.* ʒj. Let a linnen rag dipped herein, be now and then put to the Patients noſe; for the ſame purpoſe he ſhall carry a Pomander about him, and often ſmell there.

Pomanders.

As ℞ *roſ. rub. violar. an.* ʒiij. *baccarum myrti*, *juniperi*, *ſantal. rub. an.* ʒijß. *ſtyracis calamit.* ʒij. *aq. roſarum. quantum ſatis eſt: liquefiat ſimul cum ceræ albæ quod ſufficit*, *fiat ceratum ad comprehendendos ſupradictos pulveres cum piſtillo calido, & ducatur in pomum.* Or ℞ *rad. Ireos Florent. majoran. calam. aromat. ladani*, *benzoini*, *rad. cyperi*, *cariophyl. an.* ʒij. *Moſchi*, *gra.* 4. *fiat pulvis cum gummi tragacanth. quod ſufficit.* Or elſe ℞ *ladani puri* ℥j. *Benzoini* ℥ß. *ſtyracis calamit.* ʒvj. *ircos Flor.* ℥ß. *caryophyll.* ʒiij. *majoran. roſ. rub. calami aromat. an.* ʒß. *in pollinem rediganter omnia, & bulliant cum aqua roſ. quantum ſufficit; colentur, colata liquefiant cum juſta ceræ albæ quantitate, ſtyracis liquidæ*, ℥j, *fiat ad modum cerati, & cum piſtillo fiat pomum, addita moſchi* ʒj. Alſo you may corroborate the animall faculty by application of frontalls, as alſo procure ſleep, and eaſe the pain of the head; as ℞ *aq. roſ.* ℥ij. *olei roſ. & papav. an.* ℥jß. *aceti boni*, ℥j. *trochiſ. de camphora*, ℈ß. *fiat frontale.* Linnen rags dipped herein may be applyed to the temples of the forehead, and often renewed; otherwiſe by their heat, dryneſſe, and hardneſs, they will cauſe watching in ſtead of ſleep. Neither muſt you in the mean time bind the head too hard, leſt by intercepting and hindring the pulſation of the temporall Artery, you encreaſe the pain of the head. You ſhall make a fire, in the Patients chamber of odoriferous woods, as Iuniper, Bay-tree, the prunings or cuttings of Vines, Roſemary, and Orris roots. For the ſame purpoſe, you may ſprinkle the floore with ſweet water; if the Patient be able to undergoe ſuch coſt. As, ℞ *majoranæ*, *menthæ*, *radic. cyperi*, *calami aromat.* *ſalviæ*, *lavendulæ*, *fœnicul. thymi*, *ſtœchad. flor. chamæm. melilot. ſatureiæ*, *baccarum lauri, & juniperi*, *an. M.* iij. *pulv. caryophyll. nucis Moſchat. an.* ℥j. *aquæ roſar. & vitæ*, *an. lib.* ij. *vini albi boni & odorifici.* ℔.x. *bulliant omnia in balneo Mariæ ad uſum dictum.* You may alſo make perfumes to burn in his chamber, as thus; ℞. *carbonis ſalicis* ℥viij. *ladani puri* ℥ij. *thuris maſculi*, *ligni & baccarum Iuniperi*, *an.* ℥j. *xyloaloes*, *benjoini*, *ſtyracis calamit. an.* ℥ß *Nucis moſchatæ*, *ſantal. citrin. an.* ʒiij. *caryophyll. ſtyracis liquidæ*, *an.* ʒij. *zedoariæ*, *calami aromat. an.* ʒj. *gummi tragacanth. aqua roſar. ſoluti*, *quod ſit ſatis*; Make hereof perfumes in what faſhion you pleaſe. For the rottennes and corruption of bones we will treat thereof hereafter in its due place.

Frontalls to cauſe reſt, and ſtrengthen the animall faculty.

A ſweet water.

Perfumes to burn.

## CHAP. XII. *Certain memorable Hiſtories.*

HEre I thinke good for the benefit of young practitioners, to illuſtrate by examples the formerly preſcribed Method of curing Wounds made by Gunſhot. The famous and moſt valiant Count of Manſfelt, Governour of the Dutchy of *Luxembourg*, Knight of the order of Burgundy, comming to the aide of the French King, was at the battell of Moncontour, where in the conflict he received ſo great a Wound at the joint of the left arme with a Piſtoll bullet, that the bones were ſhivered and broken in ſo many peeces, as if they had been laid upon an Anvill and ſtruck with an hammer: hence proceeded many malign ſymptomes, as cruell and tormenting pain, inflammation, a feaver, an œdematous and flatulent tumor of the whole arm even to the fingers end, and a certain inclination to a Gangræne: which to reſiſt, *Nicolas Lambert*, and *Richard Hubert* the Kings Chirurgeons, had

The malign ſymptomes which uſually happens upon wounds made by Gunſhot.

had made many and deep scarifications. But when I came to visit and dress him, by the Kings appointment, and had observed the great stench, and putrefaction, I wished that they would use lotions of *Ægyptiacum* made somewhat stronger than ordinary, and dissolved in vinegar and *aqua vitæ*, and do other things more largely spoken of in the chapter of a Gangræne. For the Patient had also a *Diarrhœa* or flux, whereby he evacuated the purulent, and stinking filth which flowed from his Wound. Which how it might come to pass we will show at large when we come to treat of the suppression of the Urine. For this seemed very absurd to many, because that if this purulent humor flowed out of the arm into the belly, it must needs flow back into the veins, be mixed with the blood, and by its pernicious and contagious passage through the heart and liver, cause exceeding ill symptomes, and lastly death. Indeed he often swounded by the ascent of the filthy vapours raised from the ulcer to the noble parts; which to resist, I wished him to take a spoonfull of *aqua vitæ* with some Treacle dissolved therein. I endeavoured to repress the œdematous and flatulent Tumor, possessing all the arme with stoups dipped in oxycrate, to which was put a little salt and *aqua vitæ*; these stoups I stayed and held to the part with double cloaths, sowed as strait as I could. Such a compression held the broken bones in their places, pressed their *Sanies* from the ulcers, and forced back the humors flowing to the part into the center of the body. If at any time I omitted this compression, the tumor was so encreased, that I was in a great deal of fear, lest the native heat of the part should be suffocated. Neither could I otherwise bind up the arm by reason of the excessive pain which molested the Patient upon the least stirring of the Arm. There were also many Abcesses about his elbow and over all his arm besides. For the letting forth of whose matter I was forced, to make new incisions; which he endured very stoutly. At length I cured him with using a vulnerary potion, and by cleansing the ulcers, and correcting the putrefaction with *Ægyptiacum* dissolved in wine or honey of roses, and so poured into the ulcers, and repressing the growth of proud flesh, with the powder of burnt Alum, drying it after the detersion with liniments. Now this I can truly affirm and profess, that during the time of the cure, I took out above threescore splinters of bones, and those necessarily, amongst which there was one of the length of ones finger; yet by Gods assistance at length he became sound in all things, but that he could not put forth, or draw in his arm.

Matter may flow from the wounded limbes into the belly.

A briefe recitall of the manner of the care.

Not long after by the Kings command I went to see *Charles Philip* of Croy, Lord of Auret, the Duke of Aschos brother, not far from Mounts a City of Henalt. He kept his bed seaven months by reason of a Wound made by a Bullet the space of three fingers above his knee. When I came to him, he was afflicted with these symptomes, intolerable pain, a continuall feaver, cold sweats, watchings, excoriation of the hippes by reason of his long lying upon them, his appetite dejected with much thirst. He oft sunk down as if he had the falling sickness, had a desire to vomit, and a continuall trembling or shaking so that he could not put one hand to his mouth without the assistance of the other: he swounded frequently by reason of the vapours ascending to the noble parts. For the thighbone was broken longwayes and sidewayes with many splinters of bones, whereof some were plucked out and others remained sticking fast in. He besides also had an ulcer in his groin which reached to the midst of his thigh, & many other sinuous ulcers about his knee. All the muscles of his thigh and leg were swoln with a flegmatick, cold and flatulent humor, so that almost all the native heat of those parts seemed extinct. All which things being considered, I had scarse any hope to recover him, so that I repented my coming thither. Yet at length putting some confidence in his strength, and prime of youth, I began to have better hopes. Therefore with his good liking, first of all I make two incisions, so to let forth the matter, which lying about the bone did humect the substance of the muscles. This had happy success, and drew out a great quantity of matter; then I with a syringe injected much *Ægyptiacum* dissolved in wine, and a little *aqua vitæ* into these incisions, so to restrain and amend the putrefaction, represse the spungie, loose and soft flesh, resolve the œdematous and flatulent tumor, asswage the pain, and stir up and strengthen the native heat almost oppress by the aboundance of excrementitious humors, so that it could scarsely assimilate any nourishment and adjoin it to the parts. Then I fomented the affected part with Sage, Rose-mary, Time, Lavander, Chamomile and Melilot flowers and Red-rose leaves boyled in white wine, and lye made of Oake-ashes, adding thereto as much salt and vinegar as I judged requisite. This fomentation did attenuate & draw forth the morbfiick humor. Now we used them long & often, so to wast the humor more by drying up and breathing thorow the passages of the skin, more thereof than fell into the part. For this same purpose, we ordained that he should use frictions with hot linnen clothes, and that these should be made from above downwards, from below upwards, and so on every side, and somewhat long withall: For a short friction drawes more humor into the part than it can resolve: I wished that each other day they should lay bricks heated hot in the fire about his leg, thigh, & soal of his foot; but they were to be somewhat quenched, and sprinkled with wine and vinegar, with a small quantity of *aqua vitæ*. Much watrish moisture by this moist heat, did sweat out of these parts, the tumor was lessened, and the native heat by little and little restored. Then stoups dipped in lye made of Oake-ashes, wherein Sage, Rosemary, Lavander, salt, and cloves, were boyled, some *aqua vitæ* added, were applyed thereto; but the rowlers were so gently, and artificially wrapped about, that he did easily endure them without any pain, and that with such happy success, that if they were omitted but for one day, the tumor became very great. But thick linnen boulsters were laid upon the lower cavities of the ulcers; that so the *sanies* or filth might be more easily pressed forth. But I had alwayes a speciall care that the orifices of the ulcers should be kept open with hollow Tents or pipes put therein: and sometimes this following cataplasm was applyed to resolve the tumor. ℞ *Far. hord. fabar. & orobi, an.* ℥vj. *mellis com. & tereb. an.* ℥ij. *flo. chamæm. melil. & ros. rub. an.* ℥ß. *pulv. rad. Ireos, Flor. cyper. Mast. an.* ʒiij. *oxymel. simp. quantum sufficit; fiat cataplasma ad formam pultis satis liquidæ.* And *emplastrum de Vigo* without Mercury was applyed thereto, whereby the pain was much asswaged, and the tumor lessened: yet were they not applyed before the parts were throughly heated by the fomentation, frictions, and evaporations; for otherwayes

Horrid symptome occasioned by a wound made by Gunshot.

Incisions wherefore made.

Wherefore I used fomentations.

Mixed or round frictions, as they terme them.

A medicated Lye.

A discussing Cataplasme.

otherwayes this Emplaster could never have been activated, by reason of the excessive coldness of the affected parts. Neither did we omit catagmatick powders, fit for the taking, & drawing forth of broken bones. He used a vulnerary potion for 15 dayes. Also besides the particular frictions of the affected parts, I appointed other generall frictions of the whole body, which was become very lean; for by these, blood together with the spirit was drawn to the parts, and the acrid, and fuliginous vapours were breathed forth. To conclude, his feaver and pains being asswaged, his appetite restored, by feeding plentifully upon good meats according to his strength, he in a short time became more lusty; and lastly by the singular mercy of God, recovered his health perfectly, but that he could not very well bend his knee. I thought good to recite these things, not to glory or brag of the happy successe of those Patients, which have recovered by my means, and the favour of God; but that thus I may more fully and perfectly by familiar examples instruct young practitioners, in the operations of Chirurgery.

## CHAP. XIII. *An Apologie concerning wounds made by Gunshot.*

The occasion of writing this Apologie.

THere lately came to my hands a book written by a certain Physitian, whereby he endeavours to disprove and overthrow, that which I have hitherto writ, of the cure of wounds made by Gunshot. Assuredly if there were no other harm, but the loss of my credit ensuing thereon, I would willingly hold my peace, and stop his mouth by modest silence. But seeing the safety of so many men, lyes upon the judgement of this point, I have thought good to withstand this errour, lest it, to the great destruction of mankind, spread and diffuse it self any further.

The chiefe heads of our adversaries Treatise.

The use (saith he) of suppurative medicins, have killed many who have been but lightly wounded with Gunshot, but acrid medicins, as *Ægyptiacum*, have killed more. Neither is the counsell of *Hippocrates* to be observed in curing this sort of wounds, who bids that every contused wound be brought to suppuration. For seeing this is a new kind of wound, it requires new, and not anciently used medicines. Now the temper of the air changed from the naturall constitution ought not to indicate change of medicines; but much lesse must thunder and lightning be compared to the shooting of Great Ordinance. These are the chief heads of this his book, which because they dissent from the truth, and these

All wounds made by Gunshot are contused.

things I have formerly delivered, I have thought good here to confute. First, seeing Leaden Bullets which are usually shot out of Guns are round, obtuse and weighty, they cannot wound the body without contusion and attrition; Now no contusion can be cured without suppuration, not only according to the opinion of *Hippocrates*, but also of *Galen* and all others who have written of Physick. Neither must we invent new remedies, for these new kinds of wounds; for the lawes of the sacred and divine Art of Physick are not obnoxious to change, nor subject to the humor of men or times, as the decrees of Kings and Emperours are. For these are stablished with immutable necessity, which constancy neither consuming time, nor age, nor tyranny can pervert. Wherefore neither these who with great praise are Physitians to Kings and Princes, I mean *Ioubert* and *Potallus*, think it lawfull for them to depart from the rules of *Hippocrates*. And this they not only do and follow in curing and doing the works of Art, but much and highly commend, confirm and propound to be diligently observed by all, in their books which they have published concerning the cure of these kinds of wounds. And yet these Physitians are such, as dayly conversant in Armies and Kings houses have healed and dayly cure as many wounded by Gunshot as this Physitian our Antagonist hath seen in all his life. Neither only do these whom I have named thus cure these wounds, but almost all that dresse such kind of wounds do the like, so that if there be nothing which may hinder, or indicate to the contrary, they presently apply suppuratives.

A suppurative medicine of tryed efficacy.

And I wonder that he hath not observed how his neighbour *Doublet* the Emperick cures desperate wounds of this nature, with no other than a suppurative medicine, composed of Lard, the yolk of an Egge, Turpentine and a little Saffron. In the year 1538. there was at *Turin* whilest I was Chirurgeon there to the Marshall of *Montejan* the Kings Lieutenant Generall in *Piemont* a certain Chirurgeon wondrous famous for curing these wounds, and yet he used nothing else but the oil of Whelpes, (the description whereof I at length obtained of him with much intreaty and expence) and he used it not scalding hot, as some have imagined, but powred it scarse warm into their wounds, and so did mitigate their pain, and happily bring them to suppuration. Which afterwards almost all Chirurgeons, after they had got the description hereof, when I first published this Work, have used and daily doe use with happy successe.

The force of *Ægyptiacum* against putrefaction.

But in contemning and condemning *Ægyptiacum*, I think he hath no partaker; seeing there as yet hath been found no medicine more speedy and powerfull to hinder putrefaction, if beginning; or correct it, if present. Now these wounds often degenerate into virulent, eating, spreading, and maligne ulcers, which cast forth a stinking and carion-like filth, whence the part gangrenates, unless you withstand them with *Ægyptiacum* and other acrid medicins, being greatly approved by the formerly named Physitians and all Chirurgeons. But (saith he) this unguent is poysonous, and therefore hath been the death of many who have been wounded by Gunshot. Verily if any diligently enquire into the composition of this ointment, and consider the nature of all and every the ingredients thereof, he shall understand that this kind of Unguent is so far from poyson, that on the contrary it directly opposes and resists all poyson and putrefaction which may happen to a fleshy part, through occasion of any wound.

The force of the air in breeding and augmenting diseases.

It is most false and dissonant from the doctrine of *Hippocrates* to affirm, that the seasons of the year swerving from the Law of nature, and the air, not truly the simple and elementary, but that which is defiled and polluted by the various mixture of putrid and pestilent vapours, either raised from the earth, or sent from above, make not wounds more malign and hard to cure at some times than they are at othersome. For the air eithtr very hot, or cold, drawn into the body by inspiration or transpiration, generates a condition in us like its qualities. Therefore why may it not, when defiled with

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the putredinous vapours of bodies lying unburied after great battails, and shipwracks of great Armadoes, infect with the like quality our bodies and wounds?

A History. In the year 1562. when the civill wars concerning Religion first begun in *France*, at *Pene* a Castle lying upon the River *Lot*, many slain bodies were cast into a Well, some hundred cubits deep, so stinking and pestilent a vapour arose from hence some two months after, that many thousand of people dyed all over the Province of *Agenois*, as if the Plague had been amongst them, the pernicious contagion being spread twenty miles in compass; which none ought to think strange, especially seeing the the putrid exhalations by the force of the winds may be driven and carried into divers and most remote regions, dispersed like the seeds of the Pestilence; whence proceeds a deadly corruption of the spirits, humors, and wounds, not to be attributed to the proper malignity, or perverse cure of wounds, but to be the fault of the air. Therefore *Francis Daleschampe* in his *French* Chirurgery, in reckoning up these things which hinder the healing of Ulcers, hath not omitted that common cause which proceeds from the air defiled or tainted with the seeds of the pestilence. For he had learnt from his Master *Hippocrates* that the mutations of times chiefly bring diseases, and he had read in *Guido*, that this was the chief occasion, that wounds of the head at *Paris*, and of the legs at *Avignion*, were more difficultly healed. Lastly, even Barbers and such as have least skill in Chirurgery know, that wounds easily turn into a Gangrene in hot and moist constitutions of the air. Wherefore when the wind is southerly, the Butchers will kill no more flesh than to serve them for one day. I have formerly declared the malignity of the wounds occasioned by the air in the siege of *Roven*, which spared none, no not the Princes of the blood, who had all things which were requisite for their health. Which caused me, made at length more skilfull by experience, to use *Vnguentum Ægyptiacum* and medicins of the like faculty in stead of suppuratives, to wounds during all that season, that so I might withstand the putrefaction and Gangrene which so commonly assailed them. But if the various motion of the stars, can by their influx send a Plague into the air, why then may it not by depravation of their qualities infect, and as by poysoning corrupt both wounds and wounded bodies obnoxious to their changes and that of the air? We learnt long since by experience, that all pains but principally of wounds, grow worse in a rainy and moist season, specially because in that southerly constitution the air replete with thick and foggy vapours, causes the humors to abound in the body, which forthwith easily fall upon the affected parts, and cause increase of pain. But saith our Adversary, in the battell at *Dreux*, and at S. *Dennis* which were fought in winter, there dyed a great number of men who were wounded by Gunshot: This I confess is true; but this I deny, that it was occasioned by applying suppuratives; or corrosives, but ratherby the vehemency and largeness of their wounds, & the spoil the bullet made in their members, but above all by reason of the cold. For cold is most hurtfull to wounds and ulcers, (as *Hippocrates* testifies) it hardens the skin and causes a Gangrene. If this my Gentleman had been with me in the siege of *Metz*, he might have seen the Legs of many souldiers to have rotted, and presently taken with a Gangrene to have faln away, by the only extremity of cold; if he will not beleeve me, let him make tryall himself; and go in winter to the Chappell at Mount *Senis* one of the Alpine hills, where the bodies of such as were frozen to death in passing that way are buried, and he shall learn and feel how true I speak. In the mean time I think it fit to confute the last point of his reprehension.

*Hip. Aph. 1. sect. 3.*

In our second discourse.

The power of the stars upon the air and our bodies.

*Apher. 6. sect. 5.*

He cavills for that I compared Thunder and Lightning with the discharging peeces of Ordnance. First he cannot deny but that they are alike in effects. For it is certain that the flame arising from Gunpowder set on fire, resembles Lightning; in this also that you may see it before you hear the crack or report. I judg for that the eye almost in a moment perceives its objects; but the ear cannot but in some certain space of time, and by distinct gradations. But the rumbling noise is like in both, and certainly the report of great Ordnance may be heard sometimes at forty miles distance, whilst they make any great battery in the besieging of Cities. Besides also, Iron Bullets cast forth with incredible celerity by the fired Gunpouder, throw down all things with a horrid force, and that more speedily and violently by how much they resist the more powerfully by their hardness. They report that Lightning melts the mony not hurting the purse; Now many by the only violence of the air agitated and vehemently moved by shooting a peece of Ordnance, as touched with Lightning have dyed in a moment, their bones being shivered and broken, no sign of hurt appearing in the skin. The smell of Gunpouder when it is fired, is hurtfull, firy and sulphurous, just like that which exhales or comes from bodies killed with Lightning. For men do not only shun this smell, but also wild Beasts leave their Dens if touched with Lightnings. Now the cruelty of great Ordnance makes no less spoil amongst buildings, nor slaughter amongst men and beasts, than Lightnings do, as we have formerly shown by examples, not only horrid to see, but even to hear reported, as of Mines, the Arcenall of *Paris*, the City of *Malignes*. These may seem sufficient to teach, that thunder and lightning have a great similitude with the shooting of great Ordnance, which notwithstanding I would not have a like in all things. For they neither agree in substance, nor matter, but only in the manner of violent breaking asunder the objects.

The similitude between Thunder and great Ordnance, maintained.

Now let us see and examin what manner of cure of wounds made by Gunshot our adversary substitutes for ours. For he would have suppuratives used and applyed, yet such as should not be hot & moist in quality, or of an Emplastick consistence, but hot and dry things. For (saith he) here is not the same reason as in Abscesses, where the Physitian intends nothing but suppuration. But here because a contusion is present with the wound, this requires to be ripened with suppuratives, but the wound to be dryed.

Our adversaries method, and manner of cure reproved.

Now to answer this objection, I will refer him to *Galen*, who will teach him the nature of suppuratives; from whom also he may learn that great regard is to be had of the cause and more urgent order in the cure of compound diseases; then would I willingly learn of him, whether he can heal a wound made by Gunshot, not first bringing that which is contused to perfect maturity. If he affirm he can, I

*Gal. lib. 9. simpl. 10. Method.*

will be judged by whatsoever Practitioners he will, to judg how obscure these things are. Whereby you may the better understand there is nothing more commodious than our *Basilicon* and oil of Whelps to ripen wounds made by Gunshot, if so be that putrefaction, corruption, a Gangrene or some other thing do not hinder. Then would he have *Oxycrate* poured into these wounds to stay their bleeding, which if it cannot so be stayed, he would have a medicin applyed consisting of the white of an Egge, Bole Armenick, oil of Roses and salt. But I leave it to other mens judgment, whether these medicins have power to stay bleeding if put into the wound; certainly they will make it bleed the more. For vinegar seeing it is of a tenuious substance and biting, it is no doubt but that it will cause pain, defluxion and inflammation. To which purpose I remember I put to stanch bleeding, for want of another medie, a medicin wherein was some Vinegar, into a wound received by a Moor, an attendant of the Earl of *Roissy*, hurt with a Lance, run through his arm before *Bologne* by an *English* horseman. But he comes again to me a little after, complaining and crying out that all his arm burnt like fire; wherefore I was glad to dress him again, and put another medicin into his wound, and laid an astringent medicin upon the wound, but poured it not therein. And then above all other remedies he extols his Balsam composed of oil of Wax, and Myrrh beaten together with the white of an Egge; which he saith is equall in operation to the naturall Balsam of *Peru*. For he affirms that this hath a faculty to consume the excrementitious humidity of wounds, and so strengthens the part that no symptom afterwards troubles them. Yet he saith, this doth not so well heal and agglutinate these wounds, as it doth others which are cut. Verily it is ridiculous to think that contused wounds can be healed after the same manner as simple wounds may, which only require the uniting of the loosed continuity.

Vinegar put into a wound doth not stay but causes bleeding. A History.

Balms are fit to heal simple but not contused wounds.

Therefore neither can these Balsams be fit remedies to heal wounds made by Gunshot, seeing by reason of their dryness they hinder suppuration, which unless it be procured the Patient cannot be healed. Wherefore such things ought not be put into wounds of this nature, before they be ripened, washed and clensed from their filth. Yet can I scarse conceive, where we shall be able to find out so many Chymists which may furnish us with these things sufficiently to dress so many wounded souldiers as usually are in an Army, or whence the souldiers have sufficient means to bear the charge thereof. Also that which he saith is absurd, that these Balsams must be put into the wounds without Tents; and presently forgetting himself, he saith, it will not be amiss, if there be a little and slender Tent put into the wound, which may only serve to hinder the agglutination thereof. But how can these Balsams come to the bottomes of wounds without Tents, when as it is their chief property to carry medicins even to the innermost parts of the wounds, and alwayes keep open a free passage for the evacuation of the quitture? But it is not worthy, that after he hath rejected *unguentum Ægyptiacum*, he nevertheless bids to apply it, from the beginning untill the contusion come to perfect maturation, dissolving it in a decoction of the tops of wormwood, S. *John Wurt*, the lesser Centory and Plantain, and so injecting it into the wound. Besides also a little after he gives another way of using it, which is, to boil a quantity of Hony of Roses in plantain water, carefully skimming it, untill it be boiled to the consistence of Hony, and then to add as much *Ægyptiacum* thereto, and so to make an ointment most fit to bring these wounds to suppuration. But I leave it for any skilful in Chirurgery to judg, whether such medicins can be suppuratives, or whether they be not rather deterfives. Last of all he writes, that these wounds must be dresst but every fourth day. And if there be a fracture of the bone joyned with the wound, then to move nothing after the first dressing untill the eighth day after; then presently in another place he saith, it will be good, and expedient, to drop ten or twelve drops of the formerly described Balsam every day into the wound. Verily such doctrin which neither agrees with its self nor the truth, cannot but much puzle a Novice and young Practitioner in Chirurgery, who is not yet in versed the Art, or the operations thereof.

*Ægyptiacum* howsoever made is a clenser, not a suppurative.

## CHAP. XIIII. *Another Apologie, against those who have laboured with new reasons to prove that wounds made by Gunshot are poysoned.*

The occasion of this Apology.

SOme few months agone, I visited a Patient together with some learned Physitians and skilfull Chirurgeons. Now they, as it oft-times happens, in way of discourse, begun to argue of the condition & quality of wounds made by Gunshot, & indeavoured to prove that they might be poysoned by five reasons. Not truly through the occasion of the Gunpouder, for they all confessed that it was free from poyson, whether you have regard to its essence, or to its composition; but by the Bullet, into which the poyson may be transfused and incorporated. The first reason is, that Lead seeing it is of a rare and spongious nature, which the easiness of melting and softness argues, is very fit to drink and soak in what liquors so ever you please. But me thinks this conclusion is very weak; for in all mixtures made by Art, such as this is whereof we speak, there are two things to be considered; that is to say, the matter of the things which enter into the mixture, and the form: for the matter, such bodies must be either liquid, or soft, or friable; and lastly such as may be broken and divided into small particles, that so they may easily in all parts concur and be conjoyned and united. But for their form, there ought to be a certain affinity, consent and sympathy. You may perceive this by water and oil; for each of them though of a liquid substance, and such as may easily be mixed with divers other things, yet cannot they be mixed the one with the other by reason of their antipathy of forms. For thus gold and silver are so agreeing with lead, that as oft as they are molten lead is mixed with them. But brass shuns lead as much as gold and silver fly tin and white lead. If therefore brass and lead being melted cannot be mixed together, though contained under the same *Genus*, and common nature of Metalls; how then can it be commixt with another thing distinct in the whole kind, much more in *species*, and form, to wit, poyson? Their second reason is this; Iron, say they, which is more dense,

The reason of our adversaries that the Bullets may be poysoned, set down and confuted.

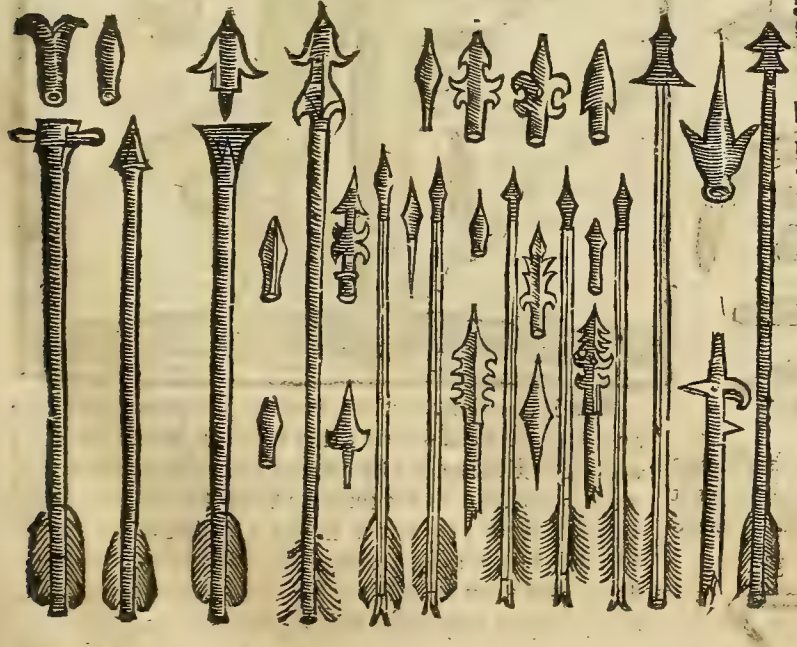
denſe, ſolid, and leſs porous, may receive ſome venenate ſubſtance and quality, as the Arrows of the Ancients which were dipped in poyſon, teſtifie; therefore muſt Lead much more be capable thereof. I anſwer, that the ſurface of Iron may be poyſoned, but not the inner part or ſubſtance by mixture therewith. But here the queſtion is of union, but not of anointing or inunction. The third reaſon is thus framed; though (ſay they) lead caſt off and purges it ſelf from the droſs and unpure parts, yet that is no argument that it will not commix, or ſoak it ſelf in ſome ſtrange liquor or body; for thus Steel, being the moſt ſolid Iron, receives the temper which hardens it by the artificial pouring upon it or quenching it in liquors contrary thereto in their whole kind. I anſwer, that Steel admits into it by that quenching and tempering, none of the juyces or liquors wherewith it is watered or quenched. For if that were neceſſary, it might be better & more eaſily performed, when the metall is firſt caſt, than when it is beaten into plates or bars; which anſwer ſhal ſerve to confute their fourth reaſon; wherin they ſay, that bullets may be made ſo poyſonous by the commixture of the juyces of Muncks-hood, Oleander, Crow-foot, and other ſuch like things which in their whole ſubſtance are contrary to ours, that the wound wch is made with them cannot but be poyſoned. But I on the contrary affirm, that mixture is only of theſe things, which may not only be put, but alſo ſtick thereto, & be mutually united but how can water or any other liquid juice ſo much as only ſtick to lead, as that which is a ſolid & firm body, it is ſo far from being united, therewith? You may give more certain judgment hereof by experience, than by reaſon; wherefore let melted lead be put into the foreſaid juices or the like; then when the lead is cold, weigh each of them ſeverally and you ſhal find, that both of them retain the ſame weight they formerly had. Which is a moſt certain argument that neither the lead hath mixed or united it ſelf with the juices, nor the juices loſt any part of their ſubſtance. Their fifth reaſon is thus; A bullet ſhot out of a Gun againſt ſome hard ſtone, grows not ſo hot, but that you may preſently without any harm take it up in your hand. Therefore it is falſe, that the poyſon commixt & united with the bullet can be diſſipated by the fire and flaſh of Gunpouder. The anſwer to this objection is eaſie. For when we ſay, that although the Bullet may be infected by poyſon perfectly commixt with the lead, yet all the force of the poyſon would be diſſipated by the fire; we would have you thus to underſtand us, that we do not mean this of that fire which is made by the pouder at the diſcharging of the Peice, but of that by force whereof the molten lead is mixed and conjoined with the venenate juice, ſo to make one of many. For this fire exerciſing its force upon the venenate juices hindered by the intercourſe of no *Medium*, and that for ſome ſpace of time, and not for an inſtant, it may, if not conſume, yet much weaken their ſtrength. If there be any, who wil not be ſatisfied by theſe reaſons, let him conſult, & read *Mathiolus*. There are (ſaith he) ſome of theſe later times wholly ignorant of things, who (if we may ſay the the truth) have been ſo madly fooliſh, that they ſaid it was fit and requiſite to put Treacle and Mithridate and ſuch like antidotes amongſt gold and ſilver that was melted to make cups, that ſo receiving the faculties of the Antidote they might reſiſt poyſon. But how abſurd and ridiculous their opinion is, let them judg (for it needs no clearer reproof) who have but a little knowledg in naturall things, but chiefly in metalls. Theſe are my reaſons, theſe the authorities of men excelling in learning & judgment, that confirm me in my ancient & former opinion, that wounds made by Gunſhot do not partake of any venenate quality. *In præfat. l. 6 Diaſcor.*

## CHAP. XV. *How wounds made by Arrows differ from ſuch as are made by Gunſhot.*

Wounds made with Arrows and ſuch like things, are often without contuſion. But are oft-times poyſoned.

WOunds made by arrows and bolts ſhot out of Croſs-bows and ſuch like things, differ chiefly in two things, from theſe which are made by gunſhot. The firſt is, for that they are oft-times without contuſion, which the other never are. The other is, for that they oft-times are poyſoned. In both theſe reſpects, their cure is different from the other. But the cure of theſe wounds made by arrows is different in it ſelf, by reaſon of the variety and divers ſorts of Darts or Arrows.

*The figure of divers ſorts of Arrows.*



## CHAP. XVI. *Of the diverſities of Arrows and Darts.*

The diffeences of Arrows.

ARrows and Darts are different amongſt themſelves both in matter and in form or figure, in number, making, faculty or ſtrength; In matter, for that ſome of them are of wood, ſome of reeds, ſome are blunt headed, others have piles or heads of iron, braſs, lead, tin, horn, glaſſe, bone. In figure, for that ſome are round, others cornered, ſome are ſharpe pointed, ſome barbed, with the barbs ſtanding either to the point, or ſhafts, or elſe acroſſe, or both wayes, but ſome are broad and and cut like a Chiſſell. For their bigneſſe, ſome are three foot long, ſome leſſe. For their number, they differ in that, becauſe ſome have one head, others more. But they vary in in making, for that ſome of them

In matter.

In figu.

In bigneſs.

In number.

In making.

In force. have the ſhaft put into the head, others the head into the ſhaft; ſome have their heads nailed to the ſhaft, others not, but have their heads ſo looſly ſet on, that by gentle plucking the ſhaft, they leave their heads behind them, whence dangerous wounds proceed. But they differ in force, for that ſome hurt by their Iron only, others beſides that, by poyſon, wherewith they are infected. You may ſee the other various ſhapes repreſented to you in the preceding Figure.

## CHAP. XVII. *Of the difference of the wounded parts.*

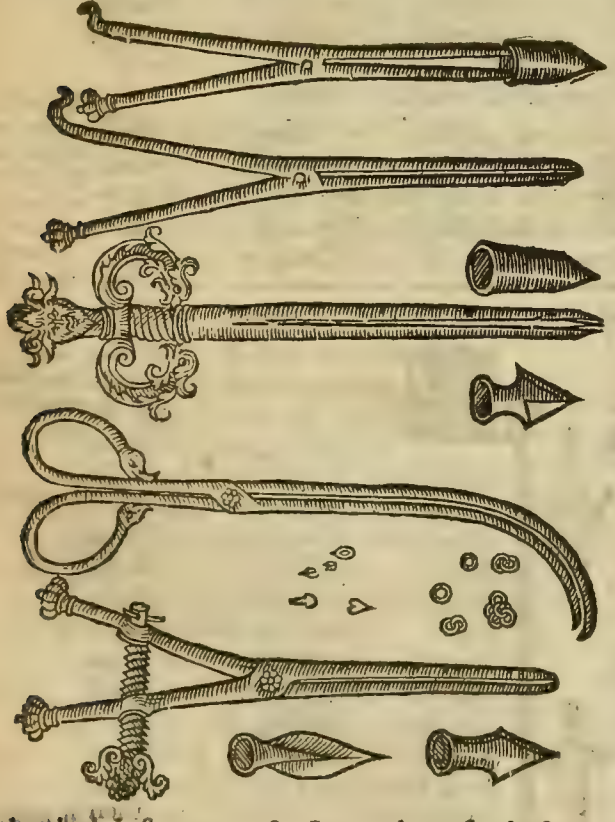
THe wounded parts are either fleſhy or bony; ſome are neer the joints, others ſeated upon the very joints; ſome are principall, others ſerve them; ſome are externall, others internall. Now in wounds where deadly ſigns appear, it's fit you give an abſolute judgment to that effect; leſt you make the Art to be ſcandalled by the ignorant. But it is an inhumane part, and much digreſſing from Art, to leave the Iron in the wound; it is ſometimes difficult to take it out, yet a charitable and artificiall work. For it is much better to try a doubtfull remedy, than none at all.

You muſt not leave the weapon in the wound.

## CHAP. XVIII. *Of drawing forth Arrows.*

The manner of drawing forth Arrows, and ſuch weapons. YOu muſt in drawing forth Arrows ſhun inciſions and dilacerations of Veins and Arteries, Nerves and Tendons. For it is a ſhamefull and bungling part to do more harm with your hand, than the Iron hath done. Now Arrows are drawn forth two wayes, that is, either by extraction, or impulſion. Now you muſt preſently at the firſt dreſſing pull forth all ſtrange bodies, which that you may more eaſily and happily perform, you ſhall ſet the Patient in the ſame poſture, as he ſtood when he received his wound; and he muſt have alſo his Inſtruments in a readineſſe, chiefly that which hath a ſlit pipe and toothed without, into which there is put a ſharpe Iron ſtyle, like the Gimblets we formerly mentioned for the taking forth of Bullets; but that it hath no ſcrue at the end, but is larger and thicker, ſo to widen the pipe, that ſo widened it may fill up the hole of the Arrows head whereinto the ſhaft was put, and ſo bring it forth with it, both out of the fleſhy as alſo out of the bony parts, if ſo be that the end of the ſhaft be not broken, and left in the hole of the head. That alſo is a fit Inſtrument for this purpoſe, which opens the other end toothed on the outſide, by preſſing together of the handle. You ſhall find the Iron or head that lies hid by theſe ſigns, there will be a certain roughneſſe and inequality obſervable on that part if you feel it up and down with your hand; the fleſh there will be bruiſed, livid, or black, and there is heavineſſe and pain felt by the Patient both there and in the wound.

*A delineation of Inſtruments fit to draw forth the heads of arrows, & darts, which are left in the wound without their ſhafts.*



A hooked Inſtrument fit for to draw forth ſtrange bodies, as pieces of Male, and ſuch other things as it can catch hold of, which may alſo be uſed in wounds made by Gunſhot.

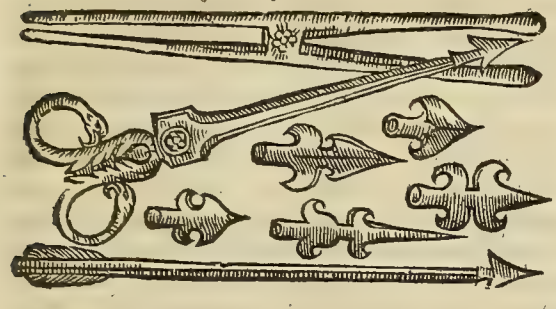
But if by chance either Arrows, Darts or Lances, or any winged head of any other weapon, be run through and left ſticking in any part of the body, as the thigh, with a portion of the ſhaft or ſtaffe ſlivered in pieces, or broken off; then it is fit the Chirurgeon with his cutting mullets ſhould cut off the end of the ſtaffe or ſhaft, and then with his other mullets pluck forth the head, as you may ſee by this Figure.

CHAP.

## CHAP. XIX. *How Arrowes broken in a wound may be drawn forth.*

BUt if it chance that the weapon is so broken in the wound, that it cannot be taken hold on by the formerly mentioned Mullets, then must you draw, or pluck it out with your Crane, or Crows bill, and other formerly described Instruments. But if the shaft be broken neer the head, so that you cannot take hold thereof with your Cranes bill, then you shall draw it forth with your Gimblet which we described before to draw forth bullets; for if such a Gimblet can be fastned in bullets, it may far better take hold of wood. But if the head be barbed, as usually the English arrowes are, then if it may be conveniently done, it will be very fitting to thrust them through the parts. For if they should be drawn out the same way they went in, there would be no small danger of breaking or tearing the Vessells and Nerves by these hooked barbes. Wherefore it is better to make a section on the other side whither the head tended, and so give it passage forth if it may be easily done; for so the wound will be the more easily clensed and consolidated. But on the contrary, if the point tend to any bone, or have many muscles or thick flesh against the head thereof, as it happens sometimes in the Thighs, Legs and Armes; then you must not thrust the head through, but rather draw it out the same way it came in, dilating the wound with fit Instruments, and by skill in Anatomie shunning the larger Nerves and Vessells. Therefore for this purpose put a hollow Dilater into the wound, and therewith take hold of both the barbs or wings of the head; and then take fast hold of the head with your Cranes-bill, and so draw them forth all three together.

*A Dilater hollowed on the inside, with a Cranes-bill to take hold of the barbed head.*



When to draw forth the weapon on the contrary side.

When by the same way it went

## CHAP. XX. *What to be done, when an Arrow is left fastned or sticking in a bone.*

BUt if the weapon be so depact and fastned in a bone that you cannot drive it forth on the other side, neither get it forth by any other way than that it entred in by; you must first gently move it up and down, if it stick very fast in, but have a speciall care that you do not break it, & so leave some fragment thereof in the bone; then take it forth with your Crowes bill, or some other fit Instrument formerly described. Then press forth the blood, and suffer it to bleed somewhat largely, yet according to the strength of the Patient and nature of the wounded part. For thus the part shall be eased of the fulness and ilness of humors, and less molested with inflammation, putrefaction and other symptomes which are customarily feared. When the weapon is drawn forth, and the wound once dressed, handle it, if simple, as you do simple wounds; if compound, then according to the condition and manner of the complication of the effects; Certainly the Oil of Whelpes formerly described is very good to asswage pain. To conclude, you shall cure the rest of the Symptomes according to the method prescribed in our Treatise of wounds in generall, and to that we have formerly delivered concerning wounds made by Gunshot.

A Caution.

The benefit of bleeding in wounds.

## CHAP. XXI. *Of poysoned wounds.*

IF these wounds at any time prove poysoned, they have it from their primitive cause, to wit, the empoisoned Arrowes, or Darts of their enemies. You may find it out both by the property of the pain, if that it be great and pricking, as if continually stung with Bees, for such pain usually ensues in wounds poysoned with hot poyson, as Arrowes usually are; Also you shall know it by the condition of the wounded flesh; for it will become pale and grow livid, with some signs of mortification. To conclude, there happen many and malign symptomes upon wounds which are empoysoned, being such as happen not in the common nature of usuall wounds. Therefore presently after you have plucked forth the strange bodies, encompass the wound with many and deep scarifications, apply ventoses with much flame, that so the poyson may be more powerfully drawn forth; to which purpose the sucking of the wound, performed by one whose mouth hath no soarness therein, but is filled with oil, that so the poison which he sucks may not stick, nor adhere to the part, will much conduce. Lastly, it must be drawn forth by rubefying, vesicatory and caustick medicins, and assailed by oyntments, cataplasmes, emplaisters, and all sorts of locall medicins.

The signs of poysoned wounds.

Remedies in poysoned wounds.

*The end of the Eleventh Book.*

# Of Contuſions and Gangrenes.

## THE TWELFTH BOOK.

### CHAP. I.

*Gal. Lib. de artis conſtitut. Sect. 2. lib. de fracturis.*

A Contuſion according to *Galen*, is a ſolution of continuity in the fleſh or bone, cauſed by the ſtroak of ſome heavy and obtuſe thing, or a fall from an high. The ſymptome of this diſeaſe is by *Hippocrates* called *Peliosis*, and *Melaſma*, that is to ſay, blackneſs and blewneſs; the Latins term it *Sugillatum*. There are divers ſorts of theſe Sugillations or blackneſſes, according as the blood is poured forth into the more inward or outward part of the body. The blood is poured forth into the body, when any (for example) falls from an high, or hath any heavy weight falls upon him, as it often happens to ſuch as work in Mines, or are extreamly racked or tortured; and ſometimes by too loud and forcible exclamation. Beſides alſo by a Bullet ſhot through the body, blood is poured forth into the bellie, and ſo often evacuated by the paſſages of the Guts and bladder. The ſame may happen by the more violent and obtuſe blowes of a hard Trunchion, Club, Stone, and all things which may bruiſe and preſs the blood out of the veſſells either by extending or breaking them. For which cauſes alſo the exteriour parts are contuſed, or bruiſed ſometimes with a wound, ſometimes without, ſo that the ſkin being whole, and as far as one can diſcern, untoucht, the blood poures it ſelf forth into the empty ſpaces of the muſcles, and between the skin and muſcles; which affect the Ancients have tearmed *Ecchymoſis*; *Hippocrates* calls it by a peculiar name *Nauſioſis*, for that in this affect the ſwoln veins ſeem as it were to vomit, and verily do vomit or caſt forth the ſuperfluous blood which is contained in them. From theſe differences of Contuſions are drawn the indications of curing, as ſhall appear by the enſuing diſcourſe.

Cauſes of Bruiſes and Sugillations.

*Sect. 2. lib. de fract.*

### CHAP. II. *Of the generall cure of great and enormous Contuſions.*

THe blood poured forth into the body, muſt be evacuated by viſible and not viſible evacuation. The viſible evacuation may be performed by blood-letting, Cupping-glaſſes, horns, ſcarification, horſleeches and fit purgative medicins; if ſo be the Patient have not a ſtrong and continuall feaver; The not viſible evacuation is performed by reſolving and ſudorifick potions, baths, and a ſlender diet. Concerning Blood-letting *Galens* opinion is plain, where he bids, in a fall from an high place, and generally for bruiſes upon what part ſoever they be, to open a vein, though the parties affected are not of a full conſtitution; for that unleſs you draw blood by opening a vein, there may inflammations ariſe from the concreat blood, from whence without doubt evill accidents may enſue. After you have drawn blood give him foure ounces of Oxycrate to drink; for that by the tenuity of its ſubſtance hinders the coagulation of the blood in the belly, or in ſtead thereof you may uſe this following potion. ℞ *rad. Gentianæ* ℥iij. *bulliant in Oxycrato; in colatura diſſolve rhei electi* ℥j. *fiat potio.* Theſe Medicins diſſolve, and caſt forth by ſpitting and vomit the congealed blood, If any thereof be contained in the ventricle or lungs; it will be expedient to wrap the Patient preſently in a ſheeps skin, being hot and newly taken from the ſheep, and ſprinkled over with a little myrrhe, creſſes and ſalt, and ſo to put him preſently in his bed, & then cover him ſo that he may ſweat plentifully. The next day take away the ſheeps-skin, and anoint the body with the following anodyne and reſolving ungnent. ℞ *unguent. de althæa* ℥vj. *olei Lumbric. chamæm. anethi. an.* ℥ij. *terebinth. venetæ* ℥iiij. *farinæ fœnugr. roſar. rub. pulveriſat. pul. myrtillorum, an.* ℥j. *fiat litus ut dictum eſt.* Then give this potion which is ſudorifick and diſſolves the congealed blood. ℞ *Ligni guajaci* ℥viij. *radicis enulæ camp. conſolid. majoris, ireos Florent. polypod. querni, ſeminis coriandri, aniſi, an.* ℥ß. *glycyrhiz.* ℥ij. *nepetæ, centaureæ, caryophyl. cardui ben. verbenæ, an. m. j. aquæ fontanæ lib.* xij. Let them be all beaten and infuſed for the ſpace of twelve houres, then let them boil over a gentle fire untill the one half be conſumed; let the Patient drink ſome half pinte of this drink in the morning, and then ſweat ſome hour upon it in his bed, and doe this for ſeaven or eight dayes. If any poor man light upon ſuch a miſchance, who for want of means cannot be at ſuch coſt, it will be good, having wrapped him in a ſheet, to bury him up to the chin in Dung mixed with ſome hay or ſtraw, and there to keep him, untill he have ſweat ſufficiently. I have done thus to many with very good ſucceſs. You ſhall alſo give the Patient potions made with ſyrups which have power to hinder the coagulation and putrefaction of the blood; ſuch as ſyrup of Vinegar, or Lemons, of the juice of Citrons and ſuch others to the quantitie of an ounce diſſolved in ſcabius, or *Carduus* water. You may alſo preſently after the fall give this drink, which hath power to hinder the coagulation of the blood, and ſtrengthen the bowells. ℞ *Rhei elect. in pul. redacti* ℥j. *aquæ rubiæ majoris, & plantag. in. an.* ℥j. *theriacæ* ℥ß. *ſyrupi de roſis ſiccis,* ℥ß, *fiat potus.* Let him take it in the morning for foure or five dayes. In ſtead hereof you may make a potion of one dram of *Sperma ceti* diſſolved in bugloſs or ſome other of the waters formerly mentioned, and half an ounce of ſyrup of Maiden-hair; if the diſeaſe yeeld not at all to theſe formerly preſcribed medicins, it will be good to give the Patient for nine dayes, three or foure houres before meat ſome of the following powder. ℞ *rhei torrefacti, rad. rub. majoris, centaurei, gentianæ, ariſtolo. rotundæ, an.* ℥ß. give ℥j. hereof with ſyrup of Vinegar and *Carduus* water. They ſay that the water of green Walnuts, diſtilled by an Alembick, is good to diſſolve congealed and knotted blood. Alſo you may uſe baths made of the decoction of the roots of Orris, Elecampane, Sorrell, Fennell, Marſhmallowes, Water-fern, or Oſmund

*Ad ſentent. 62. ſect. 3. lib. de Articulis.*

A potion to diſſolve and evacuate clotted blood.

A hot ſheeps skin.

A diſcuſſing oyntment.

A ſudorifick potion to diſſolve congealed blood.

Symps hindering putrefaction & congealing of blood.

A drink for the ſame purpoſe.

A powder for the ſame.

The diſtilled water of green Walnuts.

Baths.

mund the waterman, the greater Comfrey, the seeds of Fænugreek, the leaves of Sage, Marjerum; the flowres of Camomile, Melilote, and the like. For a warm bath hath power to rarifie the skin, to dissolve the clotted blood, by cutting the tough and mitigating the acrid humors, by calling them forth into the surface of the body, and relaxing the passages thereof; so that the rebellious qualities being orecome, there insues an easie evacuation of the matter by vomit, or expectoration, if it flote in the stomach, or be contained in the Chest; but by stool & urin, if it lye in the lower parts; by sweats and transpiration, if it lye next under the skin. Wherefore bathes are good for those who have a *Peripneumonia* or inflammation of their Lungs, or a Plurisie, according to the mind of *Hippocrates*, if so be that they be used, when the feaver begins to be asswaged; for so they mitigate pain, help forwards suppuration, and hasten the spitting up of the purulent matter. But we would not have the Patient enter into the bath, unless he have first used generall remedies, as blood-letting and purging; for otherwise there will be no small danger, lest the humors diffused by the heat of the bath, cause a new defluxion into the parts affected. Wherefore do not thou by any means attempt, to use this or the like remedy, having not first had the advice of a Physitian.

*Lib. 3. de vict. acut. & lib. 3. de morb.*

## CHAP. III. *How we must handle Contusions, when they are joyned with a wound.*

EVery great Contusion forthwith requires blood-letting, or purging, or both; and these either for evacuation, or revulsion. For thus *Hippocrates* in a contusion of the heel, gives a vomitory portion, the same day, or else the next day after the heel is broken. And then if the Contusion have a wound associating it, the defluxion must be stayed at the beginning with an ointment made of Bole Armenick, the whites of egs, and oil of roses, and myrtles, with the pouders of red roses, allome and mastich. At the second dressing apply a digestive made of the yoalk of an eg, oil of violets and turpentine. This following cataplasm shall be applyed to the near parts to help forwards suppuration. ℞. *rad. althææ, & lilii, an.* ℥ iiij. *fol. malv. violar. senecionis, an. M. ff. coquantur complete, & passentur per setaceum, addendo butyri recentis & olei viol. an.* ℥ iij. *farinæ volatilis quant. sufficit; fiat cataplasma ad formam pultis liquidæ.* Yet have a care in using of Cataplasms, that you do not too much exceed; for too frequent and immoderate use of them makes wounds phlegmonous, sordid and putrid. Wherefore the wound after it is come to suppuration must be clensed, filled with flesh and cicatrized; unlesse happily the contused flesh shall be very much torn, so that the native heat forsake it, for then it must be cut away. But if there be any hope to agglutinate it, let it be sowed, and other things performed according to Art; but the stitches must not be made so close together, as when the wound is simple, and without contusion; for such wounds are easily inflamed and swell up, which would occasion either the breaking of the thred or flesh, or tearing of the skin.

*Sect. lib. fract.*

*A suppurative Cataplasm.*

*A caution to be observed.*

*How contused wounds must be sowed.*

## CHAP. IV. *Of these Contusions which are without a wound.*

IF the skin being whole and not hurt, as far as can be discerned, the flesh which lies under it be contused, and the bloud poured forth under the skin make an *Ecchymosis*, then the Patient must be governed according to Art untill the malign symptomes which commonly happen, be no more to be feared. Wherefore in the beginning draw bloud on the opposite side, both for evacuation and revulsion. The contused part shall be scarified with equall scarifications; then shall you apply cupping-glasses or horns, both for evacuation of the bloud which causes the tumor and tension in the part; as also to ventilate and refrigerate the heat of the part, lest it turn into an Abscesse. Neither must we in the mean while omit gentle purging of the belly. The first to pick medicins ought to be astrictives, which must lye some short while upon the part, that so the Veins, and Arteries may be as it were straitned and closed up; and so the defluxion hindred; as also that the part it self may be strengthened. This may be the form of such a remedy, ℞. *Albumina ovorum nu.* iij. *olei myrtini & rosacei, an.* ℥ j. *boli armeni, & sanguin. dracon. an.* ℥ ß. *nucum cupres. gallarum, pul. aluminis usti, an.* ℥ ij. *incorporentur omnia addendo aceti parum, fiat medicamentum.* Then you shall resolve it with a fomentation, cataplasm and discussing emplaisters.

*Phlebotomy.*

*Scarifying Cupping-glasses.*

*Astrictives how good in Contusions.*

*After astrictives must follow discussives.*

## CHAP. V. *By what means the contused part may be freed from the fear and imminent danger of a Gangrene.*

GReat contusions are dangerous even for this cause, for that a Gangrene and mortification sometimes follows them; which *Hippocrates* teacheth to happen, when as the affected part is grown very hard and liquid. Wherefore when the part grows livid and black, and the native colour thereof, by reason of the efflux of the concreat bloud, is almost extinct; chiefly to ease the part of that burden, cupping-glasses and horns shal be applyed to the part it self being first scarified with a Lancet, or else the following Instrument termed a *Scarificator*, which hath 18. little wheels sharp and cutting like a razour, which may be straitened and slacked by the pins noted by *D.* and *P.* This instrument is to be commended for that it performs the operation quickly and gently, for it makes 18 incisions in the space that you make one with a Lancet or knife.

*Sect. 2. lib. de fract.*

*The cause of a Gangrene.*

*The use of a Scarificator.*

Then shall you foment the part with strong vinegar wherein the roots of radish or of Dragons, Cuckow-pint, *Salomons* Seal, *Auripigmentum* and the like have been boiled; for such acrid things do powerfully heat, resolve and draw the concreat blood from the inner part of the body unto the skin, which by its setling in the part affected, prohibits the entrance of the vitall spirits, the preservers of its integrity; yea also extinguisheth the native heat of the same part. Now we must not use these things but with great discretion, lest so we draw not only that blood which is poured forth of the vessels,

*A fomentation to discusse and draw to the skin.*

but

but alſo the other which is contained in the veſſels. Moreover alſo we muſt not uſe them, unleſſe when the defluxion is ſtayed. For ſmall contuſions (which *Galen* judgeth by the ſoftneſſe of the contuſed part) it will be ſufficient to apply to diſcuſſe them, Virgins wax diſſolved and mixed with Cummin ſeeds, Cloves, the root of black Briony, (which hath a wonderfull faculty to diſcuſſe all blacknesſes and ſugillations:) for the ſame purpoſe, you may alſo apply wormwood bruiſed and ſo warmed in a diſh and ſprinkled over with a little white wine. Alſo fry wormwood with oil of camomill, bran, the powder of Cloves, and Nutmegs, adding thereto a little *aquæ vitæ*, then put all in a linnen cloth and apply it hot to the part. The following emplaiſter doth powerfully diſcuſſe congealed blood.

*In ſect. 2. lib. de fract.*

*A Scarificator.*

A. *Shews the cover.* B. *The Box, or Caſe.*

*A diſcuſſing plaiſter.*

℞. *Picis nigræ* ℥ ij. *Gum. Elemi* ℥ i ß. *ſtyracis liquidæ & terebinth. com. an.* ℥ ß. *ſulphuris vivi* ℥ j. *Liquefiant ſimul, fiat Emplaſtrum*; and let it be ſpred upon leather and ſo applyed.

## CHAP. VI. *Of that ſtrange kind of ſymptome which happens upon contuſions of the ribs.*

*Hip ſect. 3. lib. de art. ſent. 58. & 65.*

THe fleſh contuſed ſometimes by great violence becomes mucous and ſwoln, or puffed up like Veal, which the butchers blow up, the skin remaining whole. This is ſeen and happens chiefly in that fleſh which is about the ribs; for this being bruiſed either by a blow, or fall, or renitency, or any other ſuch like cauſe; if you preſs it with your hand, a certain windineſs goeth out thereof with a ſmall whizzing, which may be heard, and the print of your fingers wil remain as in *œdema's*. Unleſs you quickly make fit proviſion againſt this ſymptome, there is gathered in that ſpace which the fleſh departing from the bones, leaves empty, a certain purulent *ſanies*, which divers times fouls and corrupts the ribs. It will be cured, if the mucous tumor be preſently preſſed, & ſtraitly bound with ligatures, yet ſo that you hinder not the breathing, when as the affect happens upon the ribs and parts of the Cheſt. Then apply to the part a plaiſter of *Oxycroceum* or *diachylon Ireatum* with the emplaiſter *de meliloto*; alſo diſcuſſing fomentations ſhall be uſed. The cauſe of ſuch a tumor is a certain mucous flegm; ſeeing that nature is ſo weak that it cannot well digeſt the nouriſhment, and aſſimilate it to the part, but leaves ſomething as it were half concocted. No otherwiſe than the conjunctive coat of the eye is ſometime ſo lifted up and ſwoln by a ſtroak, that it ſtarts as it were out of the orb of the eye, leaving ſuch filth or matter as we ſee thoſe which are blear eyed to be troubled withall; becauſe the force and naturall ſtrength of the eyes is become more weak, either by the fault of the proper diſtemperature, or the abundance of moiſture which flows thither, as it happens in thoſe tumors which are againſt nature. For flatulencies are eaſily raiſed from a wateriſh and phlegmatick humor wrought upon by weak heat, which mixed with the reſt of the humor, the tumor becomes higher.

*Remedies for a mucous and flatulent tumor of the ribs.*

*The cauſe.*

## CHAP. VII. *A diſcourſe of* Mumia, *or Mummy.*

PEradventure it may ſeem ſtrange what may be the cauſe, why in this Treatiſe of curing contuſions, or bruiſes, I have made no mention of giving Mummy either in bole, or potion to ſuch as have faln from high places, or have been otherwiſe bruiſed, eſpecially ſeeing it is ſo common and uſual, yea the very firſt and laſt medicin of almoſt all our practitioners at this day in ſuch a caſe. But ſeeing I underſtood, and had learnt from learned Phyſitians, that in uſing remedies, the indication muſt alwayes be taken from that which is contrary to the diſeaſe, how could I? how can any other give Mummie in this kind of diſeaſe, ſeeing we cannot as yet know what Mummie is, or what is the nature and eſſence thereof? So that it cannot certainly be judged; whether it have a certain property contrary to the nature and effects of contuſions. This how it may have, I have thought good to relate ſomewhat at large; neither do the Phyſitians who preſcribe Mummie, nor the Authors that have written of it, nor the Apothecaries that ſell it, know any certainty thereof. For if you read the more ancient *Serapio* and *Avicen* or the modern *Matthiolus* and *Thevet*, you ſhall find quite different opinions. Ask the Merchants who bring it to us, ask the Apothecaries who buy it of them, to ſell it to us, and you ſhall hear them ſpeak diverſly hereof, that in ſuch variety of opinions, there is nothing certain and manifeſt. *Serapio* and *Avicen* have judged Mummie to be nothing elſe but *Piſſaſphalthum*; now *Piſſaſphalthum* is a certain froth or foam riſing from the Sea, or Sea waters; this ſame foam as long as it ſwims upon the water is ſoft and in ſome ſort liquid: but being driven upon the ſhore by force of tempeſt, and working of the ſea, and ſticking in the cavities of the rocks, it concreats into ſomewhat a harder ſubſtance than dryed pitch, as *Dioſcorides* ſaith. *Belonius* ſaith, that Mummie is only known to *Ægypt* and *Greece*. Others write that it is mans fleſh, taken from the carcaſes of ſuch as are dead, and covered over in the ſands in the deſerts of *Arabia*; in which Country they ſay the Sands are ſometimes carryed and raiſed up with ſuch force and violence of the winds, that they overthrow and ſuffocate ſuch paſſengers as

*Mummie a frequent and uſuall medicin in contuſions.*

*The reaſon that the Author makes no mention thereof amongſt his medicins.*

*The opinion of the Arabians concerning it.*

*Lib. 4. cap. 84.*

*Another opinion of Mummie.*

as they meet withall;the fleſh of theſe dryed by the ſand and wind they affirm to be Mummie. *Mathiolus* following the more uſuall and common opinion writes, that Mummie is nothing elſe than a liquor flowing from the Aromatick embalments of dead bodies, which becomes dry and hard. For underſtanding whereof you muſt know from all manner of anitiquity, that the *Ægyptians* have been moſt ſtudious in burying and embalming their dead;not for that end that they ſhould become medicins for ſuch as live,for they did not ſo much as reſpect or imagin ſo horrid a wickednes;but either for that they held an opinion of the generall reſurrection,or that in theſe monuments they might have ſomething, whereby they might keep their dead friends in perpetuall remembrance. *Thevet* not much diſſenting from his own opinion,writes that the true Mummie is taken from the monuments and ſtony tombs of the anciently dead in *Egypt*, the chinks of which tombs were cloſed,and cimented with ſuch diligence; but the incloſed bodies embalmed with pretious ſpices with ſuch Art for eternity,that the linnen veſtures which were wrapt about them preſently after their death,may be ſeen whole even to this day;but the bodies themſelves,are ſo freſh that you would judg them ſcarſe to have been three daies buried.And yet in thoſe Sepulchers and Vaults from whence theſe bodies are taken, there have been ſome corps of two thouſands years old. The ſame,or their broken members are brought to *Venice* from *Syria* & *Egypt*, and thence diſperſt over all *Chriſtendom*. But according to the different condition of men,the matter of their embalments were divers; for the bodies of the Nobility or Gentry are embalmed with Myrrh, Aloes,Saffron,and other precious ſpices,and Drugs;but the bodies of the common ſort whoſe poverty and want of means could not undergo ſuch coſt,were embalmed with *aſphaltum* or *piſſaſphaltum*.

Another.

Now *Mathiolus* ſaith that all the Mummie which is brought into theſe parts is of this laſt kind & condition.For the Noblemen and chief of the province ſo religiouſly addicted to the monuments of their anceſtors,would never ſuffer the bodies of their friends,and kindred to be tranſported hither for filthy gain,and ſuch deteſted uſe,as we ſhall ſhew more at large at the end of this work. Which thing ſometimes moved certain of our *French* Apothecaries, men wondrous audacious,and covetous, to ſteal by night the bodies of ſuch as were hanged,and embalming them with Salt and Drugs they dryed them in an Oven,ſo to ſel them thus adulterated in ſtead of true Mummie.Wherefore we are thus compelled both fooliſhly and cruelly to devoure the mangled and putrid particles of the carkaſſes of the baſeſt people of *Egypt*, or of ſuch as are hanged,as though there were no other way to help or recover one bruiſed with a fall from a high place,than to bury man by an horrid inſertion in their,that is,in mans guts. Now if this Drug were any way powerfull for that they require, they might perhaps have ſome pretence,for this their more than barbarous inhumanity. But the caſe ſtands thus, that this wicked kind of Drug, doth nothing help the diſeaſed,in that caſe, wherefore and wherein it is adminiſtred,as I have tryed an hundred times, & as *Thevet* witneſſes,he tryed in himſelf,when as he took ſome thereof by the advice of a certain *Iewiſh* Phyſitian in *Egypt*, from whence it is brought;but it alſo infers many troubleſome ſymptomes,as the pain of the heart or ſtomach, vomiting and ſtink of the mouth.

What our Mummie uſually is.

Mummie is no way good for contuſions.

I perſwaded by theſe reaſons, do not only my ſelf preſcribe any hereof,to my Patients, but alſo in conſultations, endeavour what I may, that it be not preſcribed by others. It is far better according to *Galens* opinion *in Method.med.* to drink ſome oxycrate, which by its frigidity reſtrains the flowing blood,and by its tenuity of ſubſtance diſſolves and diſcuſſes the congealed clots thereof.Many reaſons of learned Phyſitians (from whom I have learned this Hiſtory of Mummie) drawn from Philoſophy, whereby they make it apparent,that there can be no uſe of this or that Mummie in contuſions, or againſt flowing or congealed blood, I willingly omit, for that I think it not much beneficiall to Chirurgeons to inſert them here.Wherefore I judg it better to begin to treat of combuſtions,or burns.

But hurtfull, and how?

The effects of oxycrate in Contuſions.

## CHAP. VIII. *Of Combuſtions and their differences.*

ALL Combuſtions whether occaſioned by Gunpouder, or by ſcalding oil,water, ſome metall or what things ſoever elſe,differ only in magnitude.Theſe firſt cauſe pain in the part, and imprint in it an unnaturall heat.Which ſavouring of the fire, leaves that impreſſion, which the Greeks call *Empyreuma*.There are more or leſſe ſigns of this impreſſion, according to the efficacy of the thing burning, the condition of the part burned, and ſtay upon the ſame.If the combuſtion be ſuperficiary,the skin riſes into puſtules and bliſters,unleſſe it be ſpeedily prevented. If it be low or deep in,it is covered with an *Eſchar* or cruſt,the burnt fleſh by the force of the fire turning into that cruſty hardneſſe.The burning force of the fire, upon whatſoever part it falls, leaves a hot diſtemper therein,condenſates,contracts,and thickens the skin, whence pain proceeds; from pain there comes an attraction of humors, from the adjacent and remote parts. Theſe humors preſently tnrned into wateriſh or ſerous moiſture,whilſt they ſeek to paſſe forth, and are hindred thereof by the skin condenſated by the action of the fire,they lift it up higher, and raiſe the bliſters which we ſee. Hence divers Indications are drawn,whence proceeds the variety of medicins for burns. For ſome take away the *Empyreuma*,that is,the heat of the fire,(as we term it)& aſſwage the pain;other hinder the riſing of bliſters;otherſome are fit to cure the ulcer,firſt to procure the falling away of the *Eſchar*,then to cleanſe, generate fleſh and cicatrize it. Remedies fit to aſſwage pain, and take away the fiery heat, are of two kinds;for ſome do it by a cooling faculty,by which they extinguiſh the preternaturall heat,and repreſs or keep back the blood and humors,which flow into the parts by reaſon of heat and pain. Others endued with contrary faculties,are hot and attractive; as which by relaxing the skin, and opening the pores,reſolve and diſſipate the ſerous humors,which yeeld both beginning,and matter to the puſtules, and ſo by accident aſſwage the pain and heat. Refrigerating things are cold water,the water of Plantain,Night-ſhade,Henbane, Hemlock; the juyces of cooling hearbs, as Purſlane, Lettuce, Plantain, Houſleek,Poppy,Mandrake and the like. Of theſe ſome may be compounded, as ſome of the forenamed

The reaſon and ſymptomes of combuſtions

The cauſe of the bliſters riſing upon burns.

Variety of medicins to take away the heat and aſſwage the pain.

named juices beaten with the white of an egge; Clay beaten and diſſolved in ſtrong Vinegar; troch Alome diſſolved in water, with the whites of egs beaten therein; writing ink mixed with Vinegar, and a little Camphire; *Vnguentum nutritum*, and alſo *Populeon* newly made. Theſe and the like ſhall be now and then renewed chiefly at the firſt, untill the heat and pain be gone. But theſe ſame remedies muſt be applyed warm, for if they ſhould be laid, or put to cold, they would cauſe pain, and conſequently defluxion; beſides alſo their ſtrength could not paſſe, or enter into the part, or be brought into action; but ſo applyed they aſſwage pain, hinder inflammation and the riſing of bliſters.

## CHAP. IX. *Of hot and attractive medicins to be applyed to burnes.*

How fire may aſſwage the pain of burning.

AMongſt the hot and attractive things which by rarifying, drawing out, and diſſolving, aſſwage the pain and heat of combuſtions, the fire challenges the firſt place, eſpecially when the burning is but ſmall. For the very common people know and find by dayly experience, that the heat of the lightly burnt part vaniſhes away, and the pain is aſſwaged, if they hold the part which is burnt ſome prety while to the heat of a lighted candle, or burning coals; for the ſimilitude cauſeth attraction. Thus the externall fire whileſt it draws forth the fire which is internall and inuſt into the part, is a remedy againſt the diſeaſe it cauſed and bred. It is alſo an eaſily made and approved remedy, if they preſently after the burn apply to the grieved part raw Onions beaten with ſome ſalt.

Beaten Onions good for burns and how.

Now you muſt note, that this medicine takes no place, if it be once gone into an ulcer, for it would increaſe the pain and inflammation; but if it be applyed when the skin is yet whole and not excoriated, it doth no ſuch thing, but hinders the riſing of puſtles and bliſters. *Hippocrates* for this cauſe alſo uſes this kind of remedy in procuring the fall of the *Eſchar*. If any endeavour to gainſay the uſe of this remedy by that principle in Phyſick, which ſayes, that contraries are cured by contraries, and therefore affirm that Onions according to the authority of *Galen*, being hot in the fourth degree, are not good for combuſtions; let him know that Onions are indeed potentially hot, and actually moiſt, therefore they rarifie by their hot quality, and ſoften the skin by their actuall moiſture, whereby it comes to paſs that they attract, draw forth, and diſſipate the imprinted heat, and ſo hinder the breaking forth of puſtles. To conclude, the fire, as we formerly noted, is a remedy againſt the fire. But neither are diſeaſes alwayes healed by their contraries (ſaith *Galen*) but ſometimes by their like; although all healing proceed from the contrary, this word *contrary*, being more largely and ſtrictly taken, for ſo alſo a Phlegmon is often cured by reſolving medicins, which healeth it by diſſipating the matter thereof. Therefore Onions are very profitable for the burnt parts, which are not yet exulcerated or excoriated. But there are alſo many other medicins good to hinder the riſing of bliſters; ſuch as new horſe-dung fryed in oil of Wal-nuts or Roſes, and applyed to the parts. In like manner the leaves of Elder or Dane-wort boiled in oil of nuts, and beaten with a little ſalt. Alſo quenched lime powdered and mixed with *Vnguentum Roſatum*. Or elſe the leaves of Cuckow-pint and Sage beaten together with a little ſalt. Alſo Carpenters Glue diſſolved in water and anointed upon the part with a feather, is good for the ſame purpoſe. Alſo thick Verniſh which poliſhers or ſword cutlers uſe. But if the pain be more vehement, theſe medicins muſt be renewed 3 or 4 times in a day and a night, ſo to mitigate the bitternes of this pain. But if ſo be we cannot by theſe remedies hinder the riſing of bliſters, then we muſt preſently cut them as ſoon as they riſe, for that the humor contained in them, not having paſſage forth, acquires ſuch acrimony that it eats the fleſh which lyeth under it, and ſo cauſeth hollow ulcers: So by the multitude of cauſes and increaſe of matter the inflammation groweth greater, not only for nine dayes (as the common people prattle) but for far longer time; alſo ſome whiles for leſs time, if the body be neither repleat with ill humors, nor plethorick, and you have ſpeedily reſiſted the pain and heat by fit remedies. When the combuſtion ſhall be ſo great as to cauſe an *Eſchar*, the falling away muſt be procured by the uſe of emollient and humective medicins, as of greaſes, oils, butter, with a little *baſilicon*, or the following ointment. ℞ *Mucagin. pſillii. & cydon. an.* ℥iiij, *gummi trag.* ℥ij. *extrahantur cum aqua parietariæ, olei liliorum* ℥ijſß. *ceræ novæ q. ſ. fiat unguentum molle*. For ulcers and excoriations you ſhall apply fit remedies, which are thoſe that are without acrimony, ſuch as *unguentum album camphoratum, deſiccativum rubrum, unguentum roſatum*, made without Venegar, or *nutritum* compoſed after this manner. ℞ *lithargyri auri* ℥iiij. *ol. roſat.* ℥iij. *ol. de papaver.* ℥ijſß. *ung. populeon.* ℥iiij. *camphoræ* ℥j. *fiat unguentum in mortario plumbeo ſecundum artem*. Or oil of Egs tempered in a Leaden mortar. Alſo unquenched lime many times waſhed and mixed with *unguentum roſatum*, or freſh butter without ſalt, and ſome yolks of egs hard roaſted. Or ℞ *Butyri recent. ſine ſale, uſtulati, & colati* ℥vj. *vitell. ovor.* iiij. *ceruſ. lotæ in aqua plantag. vel roſar.* ℥ß. *tuthiæ ſimiliter lotæ,* ℥iij. *plumbi uſti, & loti,* ℥ij. *Miſceantur omnia ſimul, fiat linimentum ut decet*. Or elſe, ℞ *cort. jambuc. viridis, & olei roſat. an. lib. j. bulliant ſimul lento igne, poſtea colentur, & adde olei ovorum* ℥iiij. *pul. ceruſſ. & tuthiæ præpar. an.* ℥j. *ceræ albæ quantum ſufficit, fiat unguent. molle ſecundum artem*. But the quantity of drying medicins may alwayes be encreaſed or diminiſhed according as the condition of the ulcer ſhall ſeem to require. The following remedies, are fit to aſſwage pain, as the mucilages of Line ſeeds, of the ſeeds of *Pſillium*, or Flea-wort, and quinces extracted in roſewater, or fair water, with the addition of a little camphire; and leſt that it dry too ſpeedily, adde thereto ſome oil of Roſes. Alſo five or ſix yolks of egs mixed with the mucilages of Line ſeed, the ſeed of *Pſillium*, and quinces often renewed, are very powerfull to aſſwage pain. The women which attend upon the people in the Hoſpitall in *Paris*, do happily uſe this medicin againſt burns. ℞ *Lard. conſciſi libram unam*; let it be diſſolved in Roſewater, then ſtrained through a linnen cloath, then waſh it foure times with the water of hen-bane or ſome other of that kind, then let it be incorporated with eight yolks of new laid egs, and ſo make an ointment. If the ſmart be great, as uſually it is in theſe kinds of wounds, the ulcer or ſores ſhall be covered over with a piece of Tiffany, leſt you hurt them, by wiping them with ſumewhat a courſe cloth, and ſo alſo the matter may eaſily come forth, and

*Lib. 5. ſimpl.*

How often in a day theſe muſt be dreſſed.

Medicins for an *Eſchar*.

A deſcription of *Nutritum*.

A remedy for burns commonly uſed in the Hoſpitall of *Paris*.

and the medicins easily enter in. Also you must have a care when the eyelids, lips, sides of the fingers, neck, the armpits, hams, and bending of the elbow are burnt, that you suffer not the parts to touch one the other, without the interposition of some thing; otherwise in continuance of time they would grow and stick together. Therefore you shall provide for this, by fit placing the parts, and putting soft linnen rags between them. But you must note, that deep combustions, and such as cause a thicker *Eschar*, are less painfull, than such as are but only superficiary. The truth hereof you may perceive by the example of such as have their limbs cut off, and seared or cauterised with an hot Iron; for presently after the cauterising is performed they feel little pain. For this great combustion takes away the sense, the vehemency of the sensory or thing affecting the sense, depriving the sensitive parts of their sense; As we have formerly noted when we treated of wounds and pains of the Nerves. The falling away of such *Eschars* shall be procured by somewhat a deep scarification which may pierce even to the quick, that so the humors which lye under it may enjoy freer perspiration, and emollient medicins may the freelier enter in, so to soak, moisten and soften the *Eschar* that it may at length fall away. The rest of the cure shall be performed by detergent and sarcotick medicins, adding to the former ointments metalline powders, when the present necessity shall seem so to require. But we cannot justly say in what proportion and quantity each of these may be mixed, by reason of that variety which is in the temper and consistence of bodies, and the stubbornes and gentleness of diseases. After a burn the scar which remaineth is commonly rough, unequall, and ill favoured: therefore we will tell you in our treatise of the plague how it must be smoothed, and made even.

*Why deep combustions are less painfull then superficiary.*

*Marks or spots made in the face by corns of Gunpowder cannot be taken away.*

I must not here omit to tell you, that Gunpowder set on fire doth often so penetrate into the flesh, not ulcerating nor taking off the skin, and so insinuate and throughly fasten it selfe into the flesh by its tenuity, that it cannot be taken or drawn out thence by any remedies, no not by *Phœnigmes* nor vesicatories, nor scarification, nor ventoses, nor horns, so that the prints thereof alwayes remain, no otherwise than the marks which the Barbarians burn in their slaves, which cannot afterwards be taken away or destroyed by any Art.

## CHAP. X. *Of a Gangrene and Mortification.*

CErtainly the malign symptomes which happen upon wounds, and the solutions of Continuity are many, caused either by the ignorance or negligence of the Chirurgeon; or by the Patient, or such as are about him; or by the malignity and violence of the disease: but there can happen no greater then a Gangrene, as that which may cause the mortification and death of the part, and oft times of the whole body; wherefore I have thought good in this place to treat of a Gangrene, first giving you the definition, then shewing you the causes, signs, prognosticks, and lastly the manner of cure. Now a Gangrene is a certain disposition, and way to the mortification of the part, which it seiseth upon, dying by little and little. For when there is a perfect mortification, it is called by the Greeks *Sphacelos*, by the Latines *Syderatio*, our countrymen terme it the fire of Saint *Anthony* or Saint *Marcellus*.

*Gal. 2. ad Glauconem.*

## CHAP. XI. *Of the generall and particular causes of a Gangrene.*

THe most generall cause of a Gangrene is, when by the dissolution of the harmony and joint temper of the foure first qualities, the part is made unapt to receive the faculties, the Naturall, Vitall, and Animall spirits, by which it is nourished, lives, feels, and moves. For a part deprived by any chance of these as of the light, languishes and presently dyes. Now the particular causes are many: and these either primitive, or antecedent. The primitive or externall are combustions caused by things either actually or potentially burning; actually, as by fire, scalding oil or water, gunpowder fired and the like. But potentially by acrid medicins; as Sublimate, vitriol, potentiall cauteries and other things of the same nature: for all these cause a great inflammation in the part. But the ambient air may cause great refrigerations, and also a Gangrene, which caused *Hippocrates lib. de Acr.* to call great refrigerarions of the brain *Sphacelisme*. Therefore the unadvised and unfit application of cold and narcotick things, a fracture, luxation and great contusion, too strait bandages, the biting of beasts, especially of such as are venemous, a puncture of the Nerves and Tendons, the wounds of the nervous parts and joints, especially in bodies which are plethorick and repleat with ill humors, great wounds whereby the vessels which carry life are much cut, whence an *aneurisma*, and lastly many other causes, which perturb that harmony of the foure prime qualities which we formerly mentioned, and so infer a Gangrene.

*The generall cause of a Gangrene.*

*The particular causes.*

*Cold causeth a Gangrene.*

## CHAP. XII. *Of the Antecedent causes of a Gangrene.*

NOw the antecedent or internall and corporeall causes of a Gangrene, are plentifull and abundant defluxions of humors, hot or cold, falling into any part. For seeing the faculty of the part is unapt and unable to sustain and govern such plenty of humors, it comes to passe that the native heat of the part is suffocated and extinct for want of transpiration. For the Arteries are hereby so shut or pent up in a strait, that they cannot perform their motions of contraction and dilatation, by which their native heat is preserved and tempered. But then the Gangrene is chiefly uncureable when the influx of humors first takes hold of the bones, and inflammation hath its beginning from them. For in the opinion of *Galen*, all these kind of affects which may befall the flesh, are also incident to the bones. Neither only a Phlegmon or inflammation, but also a rottennesse and corruption

*How defluxions cause a Gangrene.*

*An uncureable Gangrene.*

*Lib. de tumor. præter natur.*

ruption doth oft-times firſt invade and begin at the bones; for thus you may ſee many who are troubled with the Leproſie and French diſeaſe, to have their skin and fleſh whole and fair to look on, whoſe bones notwithſtanding are corrupt and rotten, and oft-times are much decayed in their proper ſubſtance. This miſchief is cauſed by a venemous matter, whoſe occult qualitie we can ſcarſe expreſſe by any other name than poyſon inwardly generated. Oft-times alſo there is a certain acrid and ſtinking filth generated in fleſh with a malign and old ulcer, with which if the bones chance to be moiſtened they become foul and at length mortified: of which this ſaying of *Hippocrates* is extant, Ulcers of a years continuance or longer, muſt neceſſarily foul the bone, and make the ſcars hollow. Whither alſo belongs this ſaying of the ſame party; An *Eriſipelas* is ill in the laying bare of a bone. But this flowing venenate and gangrenous matter is ſomewhiles hot, as in peſtilent Carbuncles, which in the ſpace of four and twenty hours by cauſing an *eſchar*, bring the part to mortification: otherwhiles cold, as we ſee it divers times happens in parts which are poſſeſt with a Gangrene, no pain, tumor, blackneſs, nor any other precedent ſign of a Gangrene going before. For *Iohn de Vigo* ſaith, that happened to a certain gentlewoman of *Genoa* under his cure.

*Aph. 5. 5 ſect. 6.*

*A Gangrene by efflux of a cold matter.*

*A notable Hiſtory.*

I remember the ſame happened to a certain man in *Paris*, who ſupping merrily and without any ſenſe of pain, went to bed, and ſuddainly in the night time a Gangrene ſeiſed on both his legs, cauſed a mortification without tumor, without inflammation; only his legs were in ſome places ſpred over with livid, black and green ſpots, the reſt of the ſubſtance retaining his native colour: yet the ſenſe of theſe parts was quite dead, they felt cold to the touch; and if you thruſt your lancet into the skin no blood came forth. A Councell of Phyſitians being called, they thought good to cut the skin, and fleſh lying under it, with many deep ſcarifications; which when I had done, there came forth a little black, thick and as it were congealed blood; wherefore this remedy, as alſo divers other, proved to no purpoſe, for in concluſion a blackiſh colour comming into his face, and the reſt of his body, he dyed frantick. I leave it to the Readers judgement, whether ſo ſpeedy, and ſuddainly cruell a miſchief could proceed from any other than a venenate matter; yet the hurt of this venenate matter is not peculiar, or by its ſelf. For oft-times the force of cold, whether of the encompaſſing air, or the too immoderate uſe of Narcotick medicins, is ſo great, that in a few hours it takes away life from ſome of the members, and divers times from the whole body, as we may learn by their example, who travell in great ſnowes, and over mountains congealed, and horrd with froſt and ice. Hence alſo is the extinction of the native heat and the ſpirits reſiding in the part, and the ſhutting forth of that which is ſent by nature to aid or defend it. For when as the part is bound with rigid cold, and as it were frozen, they cannot get nor enter therein. Neither if they ſhould enter into the part, can they ſtay long there, becauſe they can there finde no fit habitation, the whole frame and government of nature being ſpoiled, and the harmony of the four prime qualities deſtroyed, by the offenſive dominion of pred ominant cold their enemy, whereby it cometh to paſſe that flying back from whence they firſt came; they leave the part deſtitute and deprived of the benefit of nouriſhment, life, ſenſe and motion.

*Simple cold may cauſe a Gangrene.*

*A Hiſtory.*

A certain Briton an Hoſtler in *Paris*, having drunk ſoundly after ſupper, caſt himſelf upon a bed; the cold air coming in at a window left open, ſo took hold upon one of his legs, that when he waked forth of his ſleep, he could neither ſtand nor goe. Wherefore thinking only that his leg was numb, they made him ſtand to the fire; but putting it very nigh, he burnt the ſole of his foot without any ſenſe of pain, ſome fingers thickneſs, for a mortification had already poſſeſſed more than halfe his leg. Wherefore after he was carryed to the Hoſpitall, the Chirurgeon who belonged thereto, endeavoured by cutting away of the mortified leg to deliver the reſt of the body from imminent death; but it proved in vain; for the mortification taking hold upon the upper parts, he dyed within three dayes, with troubleſome belching and hicketting, raving, cold ſweat, and often ſwounding. Verily all that ſame winter, the cold was ſo vehement that many in the Hoſpitall of *Paris* loſt the wings or ſides of their noſtrills, ſeiſed upon by a mortification without any putrefaction. But you muſt note, that the Gangrene which is cauſed by cold, doth firſt and principally ſeiſe upon the parts moſt diſtant from the heart, the fountain of heat, to wit, the feet and legs; as alſo ſuch as are cold by nature, as griſtly parts, ſuch as the noſe and eares.

*What parts are uſually taken by a Gangrene occaſioned by cold.*

## CHAP. XIII. *Of the ſigns of a Gangrene.*

*Sect. 4. lib. de fract.*

THe ſigns of a Gangrene which inflammation or a phlegmon hath cauſed, are pain and pulſation without manifeſt cauſe, the ſudden changing of the fiery and red colour into a livid or black, as *Hippocrates* ſhewes where he ſpeaks of the Gangrene of a broken heel. I would have you here to underſtand the pulſifick pain not only to be that which is cauſed by the quicker motion of the Arteries, but that heavy and pricking which the contention of the naturall heat doth produce by raiſing a thick cloud of vapours from theſe humors which the Gangrene ſets upon. The ſigns of a Gangrene cauſed by cold, are, if ſuddainly a ſharp pricking and burning pain aſſaileth the part; for *penetrabile frigus adurit*, (*i*) piercing cold doth burn: if a ſhining redneſs as if you had handled ſnow, preſently turn into a livid colour; if in ſtead of the accidentall heat which was in the part, preſently cold and numbneſs ſhall poſſeſſe it, as if it were ſhook with a quartain feaver. Such cold if it ſhall proceed ſo far as to extinguiſh the native heat, bringeth a mortification upon the Gangrene; alſo oft-times convulſions & violent ſhaking of the whole body, wondrous troubleſome to the brain & the fountains of life. But you ſhall know Gangrenes cauſed by too ſtrait bandages, by fracture, luxation, and contuſion, by the hardneſs which the attraction and flowing down of the humors hath cauſed, little pimples or bliſters ſpreading or riſing upon the skin by reaſon of the great heat, as in a combuſtion; by the weight of the part occaſioned through the defect of the ſpirits not now ſuſtaining the bur-

*VVhat a pulſifick pain is.*

*Signs of a Gangrene proceeding of cold.*

*Signs of Gangrenes proceeding from ſtrait bandages, or ligatures, &c.*

den

den of the member, and laſtly from this, the preſſing of your finger upon the part, it will leave the print thereof as in an *œdema*; and alſo rom this, that the skin cometh from the fleſh without any manifeſt cauſe.

Now you ſhall know Gangrenes ariſing from a bite, puncture, *aneuriſma*, or wound in plethorick and ill bodies, and in a part indued with moſt exquiſite ſenſe, almoſt by the ſame ſigns as that which was cauſed by inflammation. For by theſe and the like cauſes, there is a far greater defluxion and attraction of the humors than is fit, when the perſpiration being intercepted and the paſſages ſtopt, the native heat is oppreſſed and ſuffocated. But this I would admoniſh the young Chirurgeon, that when by the fore-mentioned ſigns he ſhall find the Gangrene preſent, that he do not defer the amputation for that he finds ſome ſenſe, or ſmall motion yet reſiding in the part. For oft-times the affected parts are in this caſe moved not by the motion of the whole muſcle, but only by means, that the head of the muſcle is not yet taken with the Gangrene: with moving it ſelf by its one ſtrength, alſo moves its proper and continued tendon and tail though dead already; wherefore it is ill to make any delay in ſuch cauſes. d

Signs of a Gangrene occaſioned by a bite, puncture, &c.

## CHAP. XIIII. *Of the Prognoſticks in Gangrenes.*

HAving given you the ſigns and cauſes to know a Gangrene; it is fit we we alſo give you the prognoſtick. The fierceneſſe and malignity thereof is ſo great, that unleſſe it be moſt ſpeedily withſtood the part it ſelf will dye, and alſo take hold of the neighbouring parts by the contagion of its mortification: which hath been the cauſe that a Gangrene by many hath been termed an *Eſthiomenos*. For ſuch corruption creeps out like poyſon, and like fire eats, gnaws, and deſtroyes all the neighbouring parts, untill it hath ſpread over the whole body. For as *Hippocrates* writes, *Lib. de vulner. capitis*; *Mortui & viventis nulla eſt proportio*, (*i*) there is no proportion between the dead aud living. Wherefore it is fit preſently to ſeparate the dead from the living; for unleſſe that be done, the living wil dye, by the contagion of the dead. In ſuch as are at the point of death a cold ſweat flows over all their bodies: they are troubled with ravings, and watchings,, belchings and hicketing moleſt them; and often ſwoundings invade them, by reaſon of the vapours abundantly and continually raiſed from the corruption of the humors and fleſh, and ſo carried to the bowells and principall parts, by the Veins, Nerves, and Arteries. Wherefore when you have foretold theſe things to the friends of the Patient, then make haſt to fall to your work.

Why a Gangrene is called *Eſthiomenos*.

The quick impatient of the dead.

## CHAP. XV. *Of the generall cure of a Gangrene.*

THe Indications of curing Gangrenes are to be drawn from their differences, for the cure muſt be diverſly inſtituted according to the eſſence and magnitude. For ſome Gangrenes poſſeſſe the whole member; others only ſome portion thereof; ſome are deep; otherſome ſuperficiall only. Alſo you muſt have regard to the temper of the body. For ſoft and delicate bodies, as of children, women, Eunuches, and idle perſons, require much milder medicins, than thoſe who by nature and cuſtome, or vocation of life, are more ſtrong and hardy, ſuch as husbandmen, labourers, mariners, huntſmen, porters, and men of the like nature who live ſparingly and hardly. Neither muſt you have reſpect to the body in generall, but alſo to the parts affected; for the fleſhy and muſculous parts, are different from the ſolid, as the nerves and joints, or more ſolid, as the *Vertebræ*. Now the hot and moiſt parts, as the privities, mouth, womb, and fundament, are eaſilyer and ſooner taken hold of by putrefaction, wherefore we muſt uſe more ſpeedy means to help them. Wherefore if the Gangrene be chiefly occaſioned from an internall cauſe, he muſt have a dyet preſcribed for the decent and fitting uſe of the ſix things not naturall. If the body be plethorick, or full of ill humors; you muſt purge, or let blood by the advice of a Phyſitian. Againſt the aſcending up of vapours to the noble parts, the heart muſt chiefly be ſtrengthened with Treacle diſſolved in Sorrell, or *Carduus* water; with a bole of Mithridate, the conſerves of Roſes and Bugloſſe; and with Opiates made for the preſent purpoſe according to Art; this following Apozeme ſhall be outwardly applyed to the region of the heart. R. *aquæ roſar. & nenuphar. an.* ℥ iiij. *aceti ſcillitici* ℥ j. *corallorum, ſantalorum alborum & rubrorum, roſar. rub. in pulver. redactarum, & ſpodii, an.* ℥ j. *mithrid. & theriacæ, an.* ʒ ij ß. *trochiſcorum de Caphura* ʒ ij. *flor. cardial. in pollin. redactarum,* p. ij. *croci* ʒ j. *ex omnibus in pollinem redactis, fiat epithema*. Which may be applyed upon the region of the heart with a ſcarlet cloth or ſponge. Theſe are uſually ſuch as happen in the cure of every Gangrene.

What parts ſooneſt taken hold by a Gangrene

A cordiall Epitheme.

## CHAP. XVI. *Of the particular cure of a Gangrene.*

THe cure of a Gangrene, cauſed by the too plentifull and violent defluxion of humors ſuffocating the native heat, by reaſon of great Phlegmons, is performed by evacuating and drying up the humors, which putrefie by delay and collection in the part. For this purpoſe ſcarifications and inciſions, great, indifferent, ſmall, deep and ſuperficiary according to the condition of the Gangrene, are much commended; that ſo the burdened part may injoy the benefit of perſpiration; and the contained humors, of diffiation, or evacuation of their ſooty excrements. Let inciſions be made when the affect is great, deep in, and neer to mortification. But ſcarifications may be uſed when the part firſt begins to putrefie, for the greatneſſe of the remedy muſt anſwer in proportion to that of the diſeaſe. Wherefore if it penetrate to the bones, it will be fit, to cut the skin and fleſh with many and deep inciſions, with an inciſion knife made for that purpoſe; yet take heed of cutting the larger nerves and veſſels, unleſſe they be wholly putrefied, for if they be not yet putrefied, you ſhall make your inciſions in the ſpaces between them; if the Gangrene be leſſe, we muſt reſt

The cure of a Gangrene made by inflammation.

ſatisfied with only ſcarifying it. When the ſcarifications and inciſions are made, we muſt ſuffer much blood to flow forth, that ſo the conjunct matter may be evacuated. Then muſt we apply and put upon it ſuch medicins as may by heating, drying, reſolving, clenſing and opening, amend and correct the putrefaction, and by piercing to the bottom may have power to overcome the virulencie already impact in the part. For this purpoſe Lotions made of the lye of the Aſhes of fig-tree or Oak wherein Lupins have been throughly boyled are good. Or you may with leſſe trouble make a medicin with ſalt water, wherein you may diſſolve Aloes and *Ægyptiacum*, adding in the concluſion a little *Aqua vitæ*; for *aqua vitæ* and calcined vitrioll are ſingular medicins for a Gangrene. Or ℞. *acet. opimi* ℔j. *mel. roſ.* ℥iiij. *ſyrup. acetoſi* ℥iij. *ſalis com.* ℥v. *bulliant ſimul, adde aqua vitæ*, ℔.ſ. Let the part be frequently waſhed with this medicin, for it hath much force to repreſſe Gangrenes. After your Lotion, lay *Ægyptiacum* for a Liniment, and put it into the inciſions; for there is no medicin, more powerfull againſt putrefaction, for by cauſing an *Eſchar*, it ſeparates the putrid fleſh from the ſound. But we muſt not in this kind of affect expect that the putrid fleſh may of it ſelf fall from the ſound; but rather cut off with your inciſion knife or ſiſſers, whatſoever thereof you can, and then put to it *Ægyptiacum* as oft as need ſhall require. The knowledg hereof may be acquired from the colour, ſmell, and ſenſibleneſſe of the fleſh it ſelf. The deſcription of the *Ægyptiacum*, whoſe wondrous effects I have often tryed in theſe cauſes, is this. ℞ *floris æris, aluminis roch. mellis com. an.* ℥iij. *aceti acerrimi* ℥v. *ſalis com.* ℥j. *vitrioli rom.* ℥ ß. *ſublimati pul.* ℥ij. *bulliant omnia ſimul ad ignem, fiat unguent.* If the force of the putrefaction in the part be not ſo great, a weaker *Ægyptiacum* may ſerve. When you have put in the *Ægyptiacum*, then preſently lay the following Cataplaſm thereupon. For it hinders putrefaction, reſolves, clenſes and dryes up the virulent *ſanies*, and by the dry ſubtlety of the parts penetrates into the member, ſtrengthens it, and aſſwages the pain. ℞ *farin. fabar. hordei orobi, lent. lupin. an.* ℔.ſ. *ſal. com. mellis rojat. an.* ℥iiij. *ſucci abſinth. marrub. an.* ℥iiß. *aloes, maſtiches, myrrhæ, & aquæ vit. an.* ℥ij. *oxymelitis ſimpl. quantum ſufficit; fiat Cataplaſma molle ſecundum artem*; Somewhat higher than the part affected, apply this following aſtringent, or defenſitive, to hinder the flowing down of the humors into the part, and the riſing up of the vapours from the putrid part into the whole body. ℞ *olei roſati, & myrtill. an.* ℥iiij. *ſucci plantag. ſolani, ſempervivi, an.* ℥ij. *album ovorum* 5. *boli armeni, terræ ſigillatæ ſubtiliter pulveriſatorum, an.* ℥j. *oxycrati quantum ſufficit, miſce aduſum dictum.* But theſe medicins muſt be often renewed. If the grief be ſo ſtubborn, that it will not yeeld to the deſcribed remedies, we muſt come to ſtronger, to wit, Cauteries, after whoſe application, *Galen* bids to put upon it the juice of a Leek with ſalt beaten and diſſolved therewith, for that this medicin hath a piercing and drying faculty, and conſequently to hinder putrefaction. But if you prevail nothing with Cauteries, then muſt you come to the laſt remedy and refuge, that is, the amputation of the part; For according to *Hippocrates*, to extream diſeaſes exquiſitely extream remedies are beſt to be applyed. Yet firſt be certain of the mortification of the part; for it is no little or ſmall matter to cut off a member without a cauſe.

The deſcription of an *Egyptiacum*.

Aſtringents that may be uſed in cure of a Gangrene.

*Gal. 2. ad Glauconem.*

*Aphor. 6. ſect. 11.*

Therefore I have thought it fit to ſet down the ſigns, whereby you make know a perfect and abſolute mortification.

## CHAP. XVII. *The ſigns of a perfect* Necroſis *or Mortification.*

YOu ſhall certainly know that a Gangrene is turned into a Sphacell, or mortification and that the part is wholly and throughly dead, if it look of a black colour, and be colder than ſtone to your touch, the cauſe of which coldneſſe is not occaſioned by the frigidity of the air; if there be a great ſoftneſſe of the part, ſo that if you preſſe it with your finger it riſes not again, but retains the print of the Impreſſion. If the skin come from the fleſh lying under it; if ſo great and ſtrong a ſmell exhale (eſpecially in an ulcerated Sphacell) that the ſtanders by cannot indure or ſuffer it; if a ſanious moiſture, viſcid, green or blackiſh flow from thence; if it be quite deſtitute of ſenſe and motion, whether it be pulled, beaten, cruſhed, pricked, burnt, or cut off. Here I muſt admoniſh the young Chirurgeon, that he be not deceived concerning the loſſe or privation of the ſenſe of the part. For I know very many deceived as thus; the Patients pricked on that part would ſay they felt much pain there. But that feeling is oft deceitfull, as that which proceeds rather from the ſtrong aprehenſion of great pain which formerly raigned in the part, than from any faculty of feeling as yet remaining. A moſt clear and manifeſt argument of this falſe and deceitfull ſenſe appears after the amputation of the member; for a long while after they will complain of the part which is cut away.

A note concerning the unſenſibleneſſe of the part.

Verily it is a thing wondrous ſtrange and prodigious, and which will ſcarſe be credited, unleſſe by ſuch as have ſeen with their eyes, and heard with their ears the Patients who have many months after the cutting away of the Leg, grievouſly complained that they yet felt exceeding great pain of that leg ſo cut off. Wherefore have a ſpeciall care leſt this hinder your intended amputation; a thing pitifull, yet abſolutely neceſſary for to preſerve the life of the Patient and all the reſt of his body, by cutting away of that member which hath all the ſigns of a Sphacell and perfect mortification; for otherwiſe the neglected fire will in a moment ſpread over all the body, and take away all hope of remedy; for thus *Hippocrates* wiſheth: That Sections, Uſtions, and Terebrations muſt be performed as ſoon as need requires.

A wondrous ſymptome.

*Sect. 7. Lib. 6. Epidem.*

## CHAP. XVIII. *Where Amputation muſt be made.*

IT is not ſufficient to know that Amputation is neceſſary, but alſo you muſt learn in what place of the dead part, it muſt be done, and herein the wiſdom and judgment of the Chirurgeon is moſt apparent. Art bids to take hold of the quick, and to cut off the member in the ſound fleſh; but the ſame art wiſheth us, to preſerve whole that which is ſound, as much as in us lies. I will ſhew thee by a familiar example how thou maiſt carry thy ſelf in theſe difficulties. Let

The controverſy decided.

us

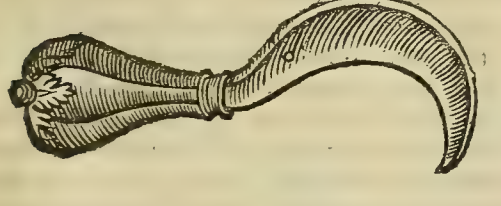
us ſuppoſe, that the foot is mortified even to the anckle; here you muſt attentively mark in what place you muſt cut it off. For unleſſe you take hold of the quick fleſh in the amputation, or if you leave any putrefaction, you profit nothing by amputation, for it will creep and ſpread over the reſt of the body. It befits Phyſick ordained for the preſervation of mankind, to defend from the iron or inſtrument & al manner of injury, that which injoyes life and health. Wherefore you ſhall cut off as little of that which is ſound as you poſſibly can; yet ſo that you rather cut away that which is quick, than leave behind any thing that is periſhed, according to the advice of *Celſus*. Yet oft-times the commodity of the action of the reſt of the part, and as it were a certain ornament thereof, changes this counſell. For if you take theſe two things into your conſideration they will induce you in this propounded caſe and example, to cut off the Leg ſome five fingers breadth under the knee. For ſo the Patient may more fitly uſe the reſt of his Leg and with leſſe trouble, that is, he may the better go on a wooden Leg; for otherwiſe, if according to the common rules of Art, you cut it off cloſe to that which is periſhed, the Patient will be forced with trouble to uſe three Legs in ſtead of two. *Lib. 7. cap. 33.*

For I ſo knew Captain *Francis Clerk*, when as his foot was ſtrucken off with an iron bullet ſhot forth of a man of war, and afterwards recovered and healed up, he was much troubled and wearied with the heavy and unprofitable burden of the reſt of his Leg, wherefore though whole and ſound he cauſed the reſt thereof to be cut off, ſome five fingers breadth below his knee; and verily he uſeth it with much more caſe and facility than before in performance of any motion. We muſt do otherwiſe if any ſuch thing happen in the Arm; that is, you muſt cut off as little of the ſound part as you can. For the action of the Legs much differ from theſe of the Arms, and chiefly in this that the body reſts not, neither is carried upon the Arms, as it is upon the feet and Legs. An obſervable Hiſtory.

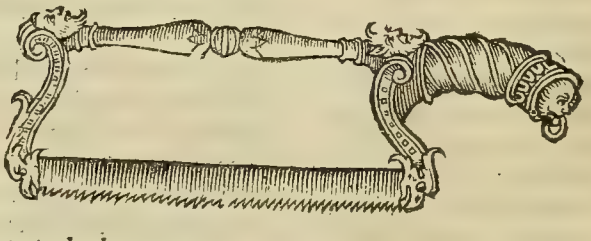
## CHAP. XIX. *How the ſection or amputation muſt be performed.*

THe firſt care muſt be of the Patients ſtrength, wherefore let him be nouriſhed with meats of good nutriment, eaſie digeſtion, and ſuch as generate many ſpirits; as with the yolks of Egs, and bread toſted and dipped in Sack or Muskadine. Then let him be placed, as is fit, and drawing the muſcles upwards towards the ſound parts, let them be tyed with a ſtrait ligature a little above that place of the member which is to be cut off, with a ſtrong and broad fillet like that which women uſually bind up their hair withall. This ligature hath a threefold uſe; the firſt is, that it hold the muſcles drawn up together with the skin, ſo that retiring back preſently after the performance of the work, they may cover the ends of the cut bones, and ſerve them in ſtead of boulſters or pillows when they are healed up, & ſo ſuffer with leſſe pain the compreſſion in ſuſtaining the reſt of the body; beſides alſo by this means the wounds are the ſooner healed and cicatrized; for by how much more fleſh or skin is left upon the ends of the bones, by ſo much they are the ſooner healed and cicatrized. The ſecond is, for that it prohibits the flux of bloud by preſſing and ſhutting up the veins and arteries. The third is, for that it dulls the ſenſe of the part by ſtupefying it, the animall ſpirits by the ſtrait compreſſing being hindred from paſſing in by the Nerves. Wherefore when you have made your ligature, cut the fleſh even to the bone with a ſharpe and well cutting inciſion knife, or with a crooked knife, ſuch as is here expreſſed. The Ligature of the parr.

*A crooked knife fit for diſmembring; or a diſmembring knife.*



*The Figure of ſuch a Saw.*

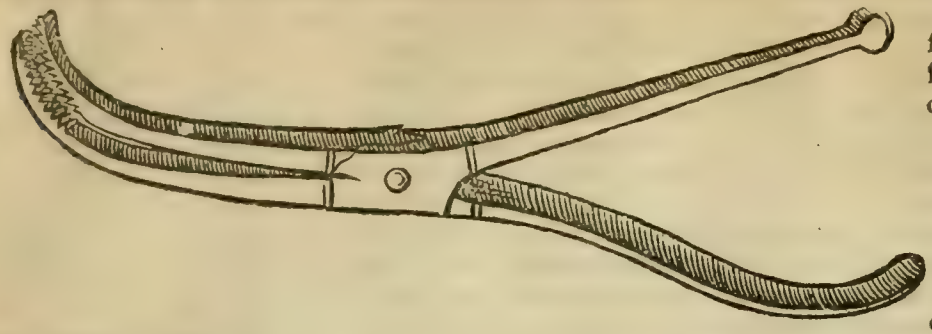


Now you muſt note, that there uſually lies between the bones, a portion of certain muſcles which you cannot eaſily cut with a large inciſion or diſmembring knife; wherefore you muſt carefully divide it and ſeparate it wholly from the bone, with an inſtrument made neatly like a crooked inciſion knife. I thought good to advertiſe thee hereof; for if thou ſhouldeſt leave any thing beſides the bone to be divided by the Saw, you would put the Patient to exceſſive pain in the performance thereof; for oft things, as fleſh, tendons and membranes, cannot be eaſily cut with a Saw. Therefore when you ſhall come to the bared bone, all the other parts being wholly cut aſunder and divided, you ſhall nimbly divide it with a little Saw about ſome foot and three inches long, and that as near to the ſound fleſh as you can. And then you muſt ſmooth the front of the bone which the Saw hath made rough. A caution to be obſerved.

## CHAP. XX. *How to ſtanch the bleeding when the member is taken off.*

WHen you have cut off and taken away the member, let it bleed a little according to the ſtrength of the Patient, that ſo the reſt of the part may afterwards be leſſe obnoxious to inflammation and other ſymptomes; Then let the veins and arteries be bound up as ſpeedily and ſtraitly as you can; that ſo the courſe of the flowing blood may be ſtopped and wholly ſtayed. Which may be done by taking hold of the veſſels with your Crows beak, whereof the figure follows.

*The Crowes beak fit for to draw the veſſells forth of the fleſh wherein they lye hid, that ſo they may be tyed or bound faſt.*



How to draw forth the veſſells and bind them.

The ends of the veſſells lying hid in the fleſh, muſt be taken hold of and drawn with this inſtrument forth of the muſcles whereinto they preſently after the amputation withdrew themſelves, as all parts are ſtill uſed to withdraw themſelves towards their originalls. In performance of this work, you need take no great care, if you together with the veſſells comprehend ſome portion of the neighbouring parts, as of the fleſh, for hereof will enſue no harme; but the veſſells will ſo be conſolidated with the more eaſe, than if they being bloodleſſe parts ſhould grow together by themſelves. To conclude, when you have ſo drawn them forth, bind them with a ſtrong double thred.

## CHAP. XXI. *How after the blood is ſtanched, you muſt dreſſe the wounded member.*

How the lips of the diſmembred part are to be joined together.

WHen you have tyed the Veſſells, looſe your Ligature which you made above the place of amputation; then draw together the lips of the wound with four ſtitches made acroſſe, having taken good hold of the fleſh; for thus you ſhall draw over the bones that part of the skin and cut muſcles drawn upwards before the amputation, and cover them as cloſe as you can, that ſo the air may the leſſe come at them, and that ſo the wound may be the more ſpeedily agglutinated. But when we ſay, draw together the lips of the wound with four ſtitches, you muſt not ſo underſtand it, as that you muſt endeavour, to draw them ſo cloſe as to touch each other, for that is impoſſible; for the ſtitches would ſooner break out, and ſo the part would lye bare. Wherefore it will be ſufficient to draw them indifferent cloſe together, that ſo you may ſuffer the skin and fleſh thereunder to enjoy its former liberty which it poſſeſt before the drawing up, and ſo in fine by natures aſſiſtance, the wound may be the more eaſily agglutinated.

## CHAP. XXII. *How you muſt ſtop the bleeding, if any of the bound up veſſells chance to get looſe.*

THe buſineſs hitherto being performed as we ſaid, if peradventure it happen that any bandage of any of the veſſels be unlooſed, then muſt you again bind the member with that kind of Ligature which you did before the amputation thereof. Or elſe, which is better, more eaſie and leſſe painfull, let your ſervant take hold of the member with both his hands, preſſing his fingers ſtrait, ſtop the paſſage of the looſed veſſell, for ſo he may ſtanch the bleeding. Then let the work-maſter take a needle ſome four fingers long, ſquare, and having ſharp edges, drawing after it a three or four doubled ſtrong thred. With this let him bind the veſſell after the following manner. Let him thruſt his needle on the outſide into the fleſh, ſome half fingers breadth from the looſed veſſell untill he come to the end thereof, then let him put it about it, and bring it back again, but ſo that there be no more than the ſpace of a fingers breadth between the going in, and coming forth of the needle. In this ſpace let him put a linnen rag three or four times doubled, and thereupon bind ſomewhat ſtrait the two ends of the thred together. For ſo he ſhall hinder the knot from hurting the fleſh which lies under it in the bindings, and alſo add ſtrength thereto. For ſo the bound up orifice of the veſſell will in ſhort ſpace be agglutinated to the adjoyning fleſh, and that ſo firmly, that there hath never been ſeen any one drop of blood to have flowed from a veſſell ſo bound up. But if the blood which flows forth proceed from any ſmall veſſell, you muſt not uſe this ſuture and ligature, nor make any ſuch great matter thereof; for it will quickly be ſtanched by the only application of Aſtringents preſently to be mentioned.

The Hæmorrhagie of ſmall veſſels is not to be regarded.

## CHAP. XXIII. *How to perform the reſidue of the cure of the amputated member.*

An emplaſtick medicine.

NOw muſt we ſhew what medicins are fitting to be applyed after the amputation of a member; which are Emplaſticks, as theſe which exceedingly conduce to green wounds. As ℞ *boli arm.* ℥iiij. *farin. vol.* ℥iij. *picis, reſinæ, an.* ℥ij. *pulveriſentur omnia ſubtiliſſ. & ſimul mixtis fiat pulvis*; herewith let the wound be ſtrewed, and lay thereupon dry Lint; but let the following repercuſſive or defenſitive be applyed to the member. ℞ *Album ovorum* vj. *boli arm. ſang. drac. gypſi, terræ ſigill. aloes, maſtiches, gallar. combuſt. an.* ℥ij. *in pollinem redigantur omnia, & bene agitentur, addendo olei roſarum & myrtil. an.* ℥j. *fiat defenſitivum ad formam mellis.* This ointment muſt be applyed upon ſtoops dipped in Oxycrate, and that ſo that it may not only cover the cut member; but alſo be ſpread further and cover the neighbouring parts; as when the Leg is cut off, it muſt be laid upon the joint, and ſpread higher than the knee, ſome four fingers upon the thigh; for it hath not only a repercuſſive faculty, but it alſo ſtrengthens the part, hinders defluxion by tempering the blood, aſſwaging pain, and hindring inflammation. It will alſo be good to moiſten your double cloths and bandages in Oxycrate; then muſt you place the member in an indifferent poſture upon a pillow ſtuffed with oaten huskes or chaffe, Stags hair, or wheat bran. It muſt not be ſtirred after the firſt dreſſing (unleſs great neceſſity urge) for four dayes in winter, but ſomewhat

A repercuſſive.

How to place the member & how often to dreſs it.

somewhat sooner in summer. For the ligatures wherewith the vessells are bound, they must not be loosed, or otherwise taken away, before the mouthes of the vessells are covered with their glue or flesh, lest by too much hast you cause a new flux of blood. This agglutination will be performed by applying refrigerating, astringent, and emplastick medicins, such as this following powder. ℞. *boli arm. farin. hord. picis. ref. gypsi, an.* ℥iiij. *Aloes, nucum cup. cort. granat. an.* ℥j. *incorporentur omnia simul, fiat pulvis subtilis:* herewith let the whole ulcer be strewed over for three or four dayes space; which being ended, let only the seats of the vessells be powdred therewith, and that for eight or ten dayes, so that we need no further doubt of the agglutination of the vessells. In the mean space let the digestive be applyed to the rest of the Ulcer untill it be come to suppuration; for then you shall give over your digestive, and betake you to detersive and mundificative medicins: As ℞. *terebinth. ven. lotæ in aqua vitæ* ℥vj. *mellis ros. colati* ℥iiij. *succi plantag. Apii, centaur. minoris, an.* ℥ij. *bulliant omnia simul usque ad consumptionem succorum, auferantur ab igne, addendo farinæ fab. & hord. an.* ℥j, *theriac. Gal.* ℥ß. *aloes, myrrhæ, aristoloch. an.* ℥iij. *croci* ℈j. *fiat mundificativum.* But seeing the case stands so that the Patients imagin they have their members yet entire, and yet do complain thereof (which I imagin to come to pass, for that the cut nerves retire themselves towards their originall, and thereby cause a pain like to convulsions; for as *Galen* writes in his book, *De motu musculorum*, that contraction is the true and proper action of a nerve and muscle: and again, extension is not so much an action as a motion:) now we must indeavour to give remedy to this symptome. Which may be done by anointing the spine of the back and all the affected part with the following Liniment, which is very powerfull against Convulsions, the Palsie, numnes and all cold effects of the nervous bodies. ℞ *salviæ, chamæpytheos, majoranæ, roris mar. menth. rutæ, lavendulæ, an, m. j. flor. chamæmel. melilot. summit. aneth. & hyperici, an. p. ij. baccarum lauri & juniperi an.* ℥ij. *radicis pyrethri* ℥ij. *mastic. assæ odorat. an.* ℥ij ß. *terebinth. venet.* ℔. j. *olei lumbr. aneth. catell. an.* ℥vj. *olei terebinth.* ℥iij. *axung. hum.* ℥ij. *croci* ℥j. *vini albi odoriferi lib. j. ceræ quantum sufficit, contundenda contundantur, pulverizanda pulverizentur, deinde macerentur omnia in vino per noctem, postea coquantur cum oleis & axungia prædictis in vase duplici, fiat linimentum secundum artem. in fine adde aquæ vitæ* ℥iiij. Besides, in dressing these wounds, the Chirurgeon must use diligence to procure the falling away of the ends or scales of the bones, which the saw and the appulse of the air never before coming hereto, have tainted; which may be done by applying to their ends actuall cauteries, that is, hot irons, in using of which you must have a speciall care that you touch not the sensible parts with fire; neither must the bones themselves be forcibly pluckt off, but gently moved by little and little, so that you shall think you and the Patient have exceedingly well performed your parts if they fall away at the thirtieth day after the Amputation. All these things being performed, you shall hinder the growth of proud flesh with the cathæreticks, such as are burnt vitriol, the powder of Mercury, and other things, amongst which is Alum burnt and powdered, which is excellent in these kind of wounds, whether by it self or mixed with others. You shall use these and such like, even unto the perfect agglutination and cicatrization of the wound, and you may of your self devise other things, such as these; as occasion shall offer its self.

An emplastick powder.

Detersives.

Why after dismembring the Patient complain of pain as if the part were yet remaining on.

An ointment for the spine of the back against all affects of the nerves.

How to procure the falling away of the ends of the bones.

Cathæreticks.

## CHAP. XXIIII. *What just occasion moved the Author to devise this new form of remedy, to stanch the blood after the amputation of a member, and to forsake the common way used almost by all Chirurgeons; which is, by application of actuall cauteries.*

VErily I confess, I formerly have used to stanch the bleeding of members after amputation, after another manner than that I have a little before mentioned. Whereof I am ashamed, and agrieved; But what should I do? I have observed my masters whose method I intended to follow, alwaies to do the like; who thought themselves singularly well appointed to stanch a flux of blood, when they were furnished with various store of hot Irons and caustick medicins, which they would use to the dismembred part, now one, then another, as they themselves thought meet. Which thing cannot be spoken, or but thought upon without great horror, much lesse acted. For this kind of remedy could not but bring great and tormenting pain to the Patient, seeing such fresh wounds made in the quick and sound flesh are endued with exquisite sense. Neither can any caustick be applyed to nervous bodies, but that this horrid impression of the fire will be presently communicated to the inward parts, whence horrid symptomes ensue, & oft-times death it self. And verily of such as were burnt, the third part scarse ever recovered, and that with much adoe, for that combust wounds difficultly come to cicatrization; for by this burning are caused cruell pains, whence a Feaver, Convulsion, and oft-times other accidents worse than these. Adde hereunto, that when the eschar fell away, oft-times a new hæmorrhage ensued, for stanching whereof they were forced to use other caustick and burning Instruments. Neither did these good men know any other course; so by this repetition there was great losse and wast made of the fleshy and nervous substance of the part. Through which occasion the bones were laid bare, whence many were out of hope of cicatrization, being forced for the remainder of their wretched life to carry about an ulcer upon that part which was dismembred; which also took away the opportunity of fitting or putting to of an artificiall leg or arm in stead of that which was taken off. Wherefore I must earnestly entreat all Chirurgeons, that leaving this old, and too too cruell way of healing, they would embrace this new, which I think was taught me by the speciall favour of the sacred Deity, for I learnt it not of my masters, nor of any other, neither have I at any time found it used by any. Only I have read in *Galen*, that there was no speedier remedy for stanching of blood, than to bind the vessells through which it flowed towards their roots, to wit, the Liver and Heart. This precept of *Galen*, of binding and sowing the Veins and Arteries in the new wounds, when as I thought it might be drawn to these which are made by the amputation of members, I attempted it in many; yea so that at first in my budding practise thereof, I alwayes had my cauteries and hot Irons in a readinesse,

Hot Irons not to be used.

*Lib. 5. Meth.*

that if any thing happened otherwiſe then I expected in this my new work, I might fetch ſuccour from the ancient practice, untill at length confirmed by the happy experience of almoſt an infinite number of particulars, I bid eternally adieu, to all hot Irons and cauteries which were commonly uſed in this work. And I think it fit that Chirurgeons do the like. For antiquity and cuſtome in ſuch things as are performed by Art, ought not to have any ſway, authority or place contrary to reaſon, as they oft-times have in civill affaires; wherefore let no man ſay unto us, that the Ancients have alwayes done thus.

## CHAP. XXV. *The practiſe of the former precepts is declared, together with a memorable hiſtory of a certain ſouldier, whoſe arm was taken off at the Elbow.*

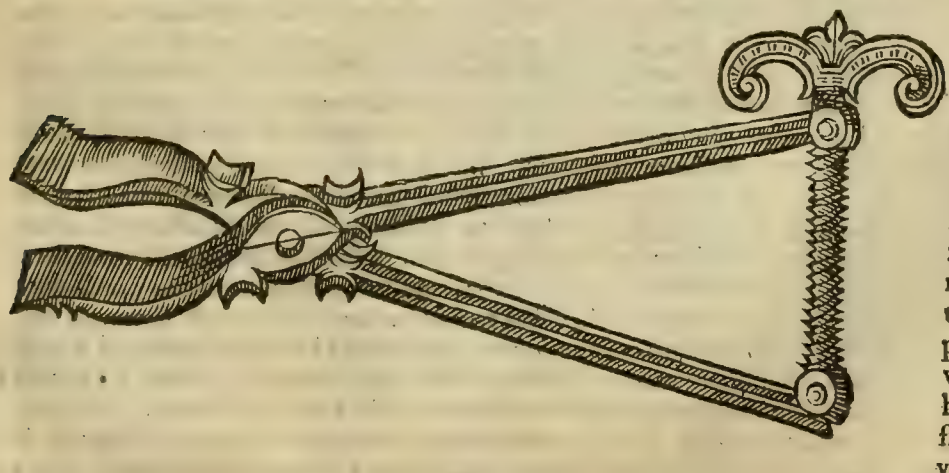
A Hiſtory.

I Think it fit to confirm by an example the preſcribed method of curing a Gangrene and Mortification. Whilſt I was Chirurgeon to the Marſhall of *Montejan* at *Turin*, a certain common ſouldier received a wound on his wriſt with a musket bullet, by which the bones and tendons being much broken, and the nervous bodies cruelly torn, there followed a Gangrene and at length a mortification even to the Elbow; beſides alſo an inflammation ſeiſed upon the middle part of his Cheſt, and there was as it were a certain diſpoſition to a Gangrene, whereby it followed that he was painfully and dangerouſly troubled with belchings, hickettings, watchings, unquietneſſe and frequent ſwoundings, which occaſioned many Chirurgeons to leave him as deſperate. But it ſo fell out, that I overcome by his friends intreaty, undertook the cure of this wretched perſon, deſtitute of all humane help. Wherefore knowing the mortification by its ſigns, I cut off the arm by the elbow as ſpeedily as I could, making firſt the ligature, whereof I made mention; I ſay I took it off not with a ſaw, but only with an inciſion knife, cutting in ſunder the ligaments which held the bones together, becauſe the ſphacell was not paſſed the joint of the Elbow. Neither ought this ſection to be counted ſtrange, which is made in a joint; for *Hippocrates* much commends it, and ſaith that it is eaſily healed, & that there is nothing to be feared therein beſides ſwounding, by reaſon of the pain cauſed by cutting the common tendons & ligaments. But ſuch inciſion being made, the former ligature could not hinder, but much blood muſt flow from thence, by reaſon of the large veſſels that run that way. Wherefore I let the blood to flow plentifully ſo to disburden the part, and ſo afterwards to free it from the danger and fear of inflammation and a Gangrene; then preſently I ſtanched the blood with an hot Iron, for as yet I knew no other courſe. Then gently looſing the ligature I ſcarifie that part of the brawn of the Arm which was gangrenated, with many and deep inciſions, ſhunning and not touching the inner part, by reaſon of the multitude of the large veſſels and Nerves which run that way; then I preſently applyed a cautery to ſome of the inciſions, both to ſtanch the bleeding, and draw forth the virulent *ſanies* which remained in the part. And then I aſſailed and overcame the ſpreading putrefaction by putting and applying the formerly preſcribed medicins; I uſed all ſorts of reſtrictive medicins, to ſtay the inflammation of the Cheſt; I alſo applyed Epithema's to the region of the heart, and gave him cordial potions and boles, neitheir did I deſiſt from uſing them untill ſuch time as his belching, hicketting and ſwoundings had left him. Whilſt I more attentively intended theſe things, another miſchief aſſails my Patient, to wit, Convulſions, and that not through any fault of him or me, but by the naughtineſſe of the place wherein he lay, which was in a Barn every where full of chinks and open on every ſide, and then alſo it was in the midſt of winter raging with froſt and ſnow and all ſorts of cold; neither had he any fire or other thing neceſſary for preſervation of life, to leſſen theſe injuries of the air and place; Now his joints were contracted, his teeth ſet, and his mouth and face were drawn awry, when as I pitying his caſe made him to be carried into the neighbouring Stable which ſmoaked with much horſe dung, and bringing in fire in two chafendiſhes, I preſently anointed his neck and all the ſpine of his back, ſhunning the parts of the Cheſt, with liniments formerly deſcribed for convulſions; then ſtraight way I wrapped him in a warm linnen cloth, and buried him even to the neck in hot dung, putting a little freſh ſtraw about him; when he had ſtayed there ſome three dayes, having at length a gentle ſcouring or flux of his belly, and plentifull ſweat, he begun by little and little to open his mouth and teeth which before were ſet and cloſe ſhut. Having got by this means ſome opportunity better to do my buſineſſe, I opened his mouth as much as I pleaſed, by putting this following Inſtrument between his teeth.

Diſmembring at a joint. *Sect. 4. Lib. de Art.*

Burying in hot horſe dung helps Convulſions.

*A Dilater made for to open the mouth and teeth by the means of a ſcrew in the end thereof.*



Now drawing out the Inſtrument I kept his mouth open by putting in a willow ſtick on each ſide therof, that ſo I might the more eaſily feed him with meats ſoon made, as with Cows milk and rear egs, untill he had recovered power to eat, the convulſion having left him. He by this means freed from the Convulſion, I then again begun the cure of his arm, and with an actuall cautery ſear the end of the bone, ſo to dry up the perpetuall

petuall afflux of corrupt matter. It is not altogether unworthy of your knowledg, that he ſaid, how that he was wondrouſly delighted by the application of ſuch actuall cauteries, a certain tickling running the whole length of the arm by reaſon of the gentle diffuſion of the heat by the applying the cauſtick; which ſame thing I have obſerved in many others; eſpecially in ſuch as lay upon the like occaſion in the Hoſpitall of *Paris*. After this cauterizing there fell away many and large ſcales of the bone, the freer appulſe of the air than was fit making much thereto; beſides when there was place for fomentation, with the decoction of red Roſe leaves, Wormwood, Sage, Bay leaves, flowers of Camomil, Melilote, Dill, I ſo comforted the part that I alſo at the ſame time by the ſame means drew and took away the virulent *Sanies*, which firmly adhered to the fleſh and bones. Laſtly, it came to paſſe, that by Gods aſſiſtance, theſe means I uſed, and my carefull diligence, he at length recovered. Wherefore I would admoniſh the young Chirurgeon, that he never account any ſo deſperate, as to give him for loſt, content to have let him go with prognoſticks; for as an ancient Doctor writes; that as in Nature, ſo in diſeaſes there are alſo Monſters.

A fomentation for a Convulſion.

Monſters or miracles in diſeaſes.

*The End of the Twelfth Book.*

# *Of Ulcers, Fiſtula's, and Hæmorrhoides.*

## THE THIRTEENTH BOOK.

### CHAP. I. *Of the nature, cauſes and differences of Vlcers.*

HAving already handled and treated of the nature, differences, cauſes, ſigns and cure of freſh and bloody wounds, reaſon and order ſeem to require that we now ſpeak of Ulcers; taking our beginning from the ambiguity of the name. For according to *Hippocrates*, the name of Ulcer moſt generally taken may ſignifie all or any ſolution of Continuity; In which ſenſe it is read that all pain is an Ulcer. Generally, for a wound and Ulcer properly ſo called; as appears by his Book, *de Vlceribus*. Properly, as when he ſaith, it is a ſign of death when an Ulcer is dryed up through an *Atrophia*, or defect of nouriſhment. We have here determined to ſpeak of an Ulcer in this laſt and proper ſignification. And according thereto we define an Ulcer to be the ſolution of Continuity in a ſoft part, and that not bloody, but ſordid and unpure, flowing with quitture, *Sanies* or any ſuch like corruption, aſſociated with one or more affects againſt nature, which hinder the healing and agglutination thereof; or that we may give you it in fewer words according to *Galens* opinion; An ulcer is a ſolution of Continuity, cauſed by Eroſion. The cauſes of Ulcers are either internall or externall. The internall are through the default of humors peccant in quality rather than in quantity, or elſe in both, and ſo making eroſion in the skin and ſofter parts by their acrimony and malignity; now theſe things happen either by naughty and irregular diet, or by the ill diſpoſition of the entrails, ſending forth and emptying into the habit of the body this their ill diſpoſure. The externall cauſes are, the exceſſe of cold ſeiſing upon any part, eſpecially more remote from the fountain of heat, whence follows pain, whereunto ſucceeds an attraction of humors and ſpirits into the part, and the corruption of theſe ſo drawn thither by reaſon of the debility or extinction of the native heat in that part, whence laſtly ulceration proceeds. In this number of externall cauſes may be ranged, a ſtroak, contuſion, the application of ſharp and acrid medicins, as cauſticks, burns; as alſo impure contagion, as appears by the virulent ulcers acquired by the filthy copulation or too familiar converſation of ſuch as have the *French* diſeaſe. How many and what the differences of Ulcers are, you may ſee here deſcribed in this following Scheme.

The divers acceptions of an Ulcer. *Sent. 34. ſect. 3. lib. de fract.*

*Sect. 1. prog.*

What an Ulcer properly is. *Lib. de conſtit. Artis cap. 6.*

The internall cauſes.

The externall cauſes.

### A Table of the differences of Ulcers.

*An Vlcer is an impure ſolution of continuity in a ſoft part, flowing with filth and matter or other corruption, whereof there are two chief differences; for one*

- *Is ſimple and ſolitary without complication of any other affect againſt nature, and this varies in differences, either*
  - *Proper, which are uſually drawn from three things; to wit,*
    - *Figure, whence one Vlcer is called*
      - *Round or circular.*
      - *Sinuous, and variouſly ſpread.*
      - *Right or oblique.*
      - *Cornered as triangular.*
    - *Quantity, and that either according to their*
      - *Length; whence an Vlcer is long, ſhort, indifferent.*
      - *Breadth; whence an Vlcer is broad, narrow, indifferent.*
      - *Profundity; whence an Vlcer is deep, ſuperficiary, indifferent.*
    - *Equality or inequality; which conſiſts*
      - *In thoſe differences of dimenſions whereof we laſt treated, I ſay in length, breadth and profundity, wherein they are either alike or of the ſame manner, or elſe unlike and ſo of a different manner.*

Of

a b Or common and accidentall, and these drawn, either
- From their time; whence an Ulcer is tearmed new; old, of short or long cure and duration.
- From their appearance; whence one is called an apparent Ulcer; another a hidden and occult Ulcer.
- From their manner of generation; as if it be made by a heavy, bruising, cutting, pricking or corroding thing; whence a cut, torn and mixt Ulcer.
- From their site; whence an Ulcer before, behind, above, below, in the head, tail, or belly of a Muscle.
- From that part it seises upon, whence an Ulcer in the flesh and skin, or feeding upon the gristles or bones, such as these of the nose, the palat of the mouth, and ears.
- From other common accidents; whence a Telephian Ulcer; that is, such an Ulcer as Telephus had. A Chironian, which needs the hand and art of Chiron. A Canckrous, which resembles a Cancer.

Is compound and many and various wayes complicated, as
- With the cause, whence an Ulcer: Is Cacochymick, Catarrhoick or venenate, that is, which a Cachochymia or Repletion of ill humors, a Catarrh, or poison cherishes or feeds.
- With the disease, as from:
  - Distemper whether simple or compound, whence an Ulcer is: Hot. Cold. Dry. Moist. Mixt.
  - Swelling or Tumor, whence a: Phlegmonous, Erysipelous, Oedematous, Scirrhous, Cancrous — Ulcer.
  - Solution of continuity, or any other discommodity, whence a rough, callous, fistulous, cavernous, sinuous Ulcer, with luxation, fracture, &c.
- With the Symptome, whence, a corroding, eating, painfull, sordid and virulent Ulcer.
- With the cause and disease,
- With the cause and Symptome,
- With the disease and Symptome,
- With the cause, disease, and Symptome.

Examples whereof may be taken from that we have formerly delivered.

## CHAP. II. *Of the signs of Ulcers.*

The signs of a putrid Ulcer.

THere are various signs of Ulcers according to their differences. For it is the sign of a putrid Ulcer, if it exhale a noysome, grievous, stinking and carion-like vapour, together with filthy matter. An eating Ulcer is known by the eating in, hollowness and wearing away of the part wherein it resides, together with the adjoining parts. A sordid Ulcer may be known by the grosness and viscidity of the excrements it sends forth, and by the loose and spongy softness, or the crusted inequality of the flesh which grows over it. A cavernous Ulcer, by the straitness of the orifice, and largeness and deepness of the windings within. A fistulous Ulcer, if to the last mentioned signs there accrew a callous hardness of the lips or sides of the Ulcer. A cancrous Ulcer is horrible to behold with the lips turned back, hard and swoln, flowing with virulent and stinking corruption, and sometimes also with bloody matter, together with the swelling and lifting up of the adjacent veins. An untemperate, or as they term it, a distempered Ulcer, is such as is nourished by some great distemper whether hot or cold, moist or dry, or compounded of these. An ill * natured or malign Ulcer is known by the difficulty of curing and rebellious contumacy to remedies appointed according to Art and reason. We know a catarrhous Ulcer, if the matter which feeds it flow to it from some *varices* thereunto adjoining, or dilated, swollen and broken veins, or from some entrail, or from the whole body being ill affected. An Apostumatous Ulcer is perceived by the presence of any tumor against nature, whose kind may be found out by sight and handling. *Telephian* Ulcers, are such as affected *Telephus*, and *Chironian* (in whose cure *Chiron* excelled) are Ulcers which may be known by their magnitude not much putrid, and consequently not sending forth any ill smell, not eating, not tormenting with pain, but having their lips swoln and hard, and therefore ill to be healed. For although they may be sometimes cicatrized, yet it being but slender may easily be broken, and the Ulcer renewed. They are almost like an ulcerated Cancer, but that they are accompanied with swelling in the adjacent parts; they are also worse than these which are termed *Cacoethe*, that is, ill natured, or malign; whence it is that *Fernelius* thought they had a hidden cause of malignity, besides the common default of the humor, and that such as can scarse be driven away; such commonly are felt after the plague. Wherefore *Galen* thinks such to be malign as will not suppurate or yeeld any quitture.

*Gal. cap. 5. lib. 4. Meth.* * *Ulcus cacoethes.*

*Com. ad aphor. 22. sect. 5.*

## CHAP. III. *Of the Prognosticks of Ulcers.*

*Aph. 45. sect. 6.*

THe bone must necessarily scale, and hollow scars be left by malign Ulcers of a years continuance or longer, and rebellious to medicins fitly applyed. The bone must scale by reason of the continuall afflux, and wearing by the acrimony of the humor, which looses the composure and glue by which the parts thereof are joined together. But the scars must become hollow, for that the bone (whence all the flesh takes its first originall) or some portion thereof, being taken from under the flesh, as the foundation thereof, so much of the bulk of the

flesh

fleſh muſt neceſſarily ſink down, as the magnitude of the portion of the waſted bone comes unto.

You may know that death is at hand, when the Ulcers that ariſe in or before diſeaſes, are ſuddainly either livid or dryed, or pale and withered. For ſuch drineſs ſheweth the defect of nature, which is not able to ſend the familiar and accuſtomed nutriment to the part ulcerated. But the livid or pale colour is not only an argument of the overabundance of choler and melancholy, but alſo of the extinction of the native heat. In Ulcers where tumors appear, the patients ſuffer no convulſions, neither are frantick; for the tumor being in the habit of the body poſſeſſed with an Ulcer, argues that the nervous parts and their originall are free from the noxious humors. But theſe tumors ſuddainly vaniſhing and without manifeſt cauſe, as without application of a diſcuſſing medicin, or bleeding, thoſe who have them on their backs have convulſions and diſtenſions, for that the ſpine of the back is almoſt wholly nervous; but ſuch as have them on their fore parts, become either frantick, or have a ſharp pain of their ſide, or pleuriſie, or elſe a dyſentery if the tumors be reddiſh; for the forepart of the body is repleniſhed and overſpread with many and large veſſells, into whoſe paſſages the morbifick matter being tranſlated, is preſently carryed to theſe parts which are the ſeats of ſuch diſeaſes. Soft and looſe tumors in Ulcers are good, for they ſhew a mildneſs and gentleneſs of the humors, but crude and hard ſwellings are naught; for all digeſtion in ſome meaſure reſembles elixation. Ulcers which are ſmooth and ſhining are ill, for they ſhew that there reſides an humor malign by its acrimony, which frets aſunder the roots of the hairs, and depraves the naturall conſtruction of the pores of the skin; whence it is that ſuch as are troubled with Quartain agues, the Leproſie or *Lues venerea*, have their hair fall off. A livid fleſh is ill in Ulcers which cauſe a rottenneſs or corruption of the bones lying under the fleſh; for it is an argument of the dying heat and corruption of the bone, whence the fleſh hath its originall & integrity.

*Hip.progn. lib.1. cap.8. Aph.55.ſect.5.*

*Aph.97. ſect.5.*

*Aph.4. ſect.6.*

Theſe Ulcers which happen by occaſion of any diſeaſe, as a Dropſie, are hard to be cured; as alſo thoſe whereinto a *varix* or ſwoln veſſell continually caſts in matter; which a preſent diſtemper foments; which have ſwoln, hard and callous lips; and ſuch as are circular or round. An *Hyperſarcoſis*, or fleſhy excreſcence uſually happens to Ulcers not diligently mundified; and if they poſſeſs the arms or Legs, they cauſe a Phlegmon or ſome other tumor in the groins, chiefly if the body be full of ill humors, as *Avicen* hath noted. For theſe parts by reaſon of their rarity and weakneſs are fit and ſubject to defluxions. *Albucraſis* writes that for nine cauſes Ulcers are difficultly repleniſhed with fleſh and cicatrized. The firſt for want of blood, in a bloodleſſe body; the ſecond by reaſon of ill humors and the impurity of the blood; the third by the unfit application of unconvenient medicins; the fourth by reaſon of the ſordidneſs of the Ulcer; the fifth by the putrefaction of the ſoft and carion-like fleſh encompaſſing the Ulcer; the ſixth when they take their originall from a common cauſe which every where rages with fury, ſuch as are thoſe which are left by the peſtilence; the ſeaventh by reaſon of the callous hardneſs of the lips of the Ulcer. The eighth when the heavens and air are of ſuch condition as miniſters fuell to the continuance of the Ulcer, as at Sarogoza in Aragon; the ninth when the bones which lye under it are waſted by rottenneſs. An Ulcer that caſts forth white, ſmooth, equall quitture, and little or no ſtinking, is eaſily healed; for it argues the victory of the native heat, and the integrity of the ſolid parts. We terme that ſmooth quitture which is abſolutely concocted, neither yeelds any aſperity to the touch, whereby we might ſuſpect that as yet any portion of the humor remains crude; we call that equall wherein you can note no diverſity of parts; & white not that which is perfectly ſo, but that which is of an aſh colour, as *Galen* obſerves. But it is ill, if when the cure is indifferently forward, a flux of blood ſuddainly break forth in thoſe Ulcers which beat ſtrongly by reaſon of the great inflammation adjoyned therewith. For as *Hippocrates* obſerves, an effuſion of blood happening upon a ſtrong pulſation in Ulcers is evill; for the blood breaking out of an Artery cannot be ſtayed but by force; and alſo this blood is ſo furious by reaſon of the heat and inflammation the nourithers of this Ulcer that it breaks its receptacles, and hence enſues the extinction of the native heat, whence the defect of ſuppuration and a Gangrene enſues. Now for that there flowes two ſorts of excrements from malign Ulcers, the more thin is tearmed *Ichor* or *ſanies*, but the more groſſe is named *ſordes*; that is virulent and flowes from pricked nerves, and the *perioſtea* when they are evill affected; but the other uſually flowes from the Ulcers of the joints, and it is the worſer if it be black, reddiſh, aſh-coloured, if muddy or unequall like wine Lees, if it ſtink. *Sanies* is like the water wherein fleſh hath been waſhed; it argues the preternaturall heat of the part, but when it is pale coloured, it is ſaid to ſhew the extinction of the heat.

*Hip. Lib. de ulc. Gal. cap. 2. & 5. lib. Meth. 4.*

For what cauſes Ulcers are hard to heal.

What *pus* or matter is ſmooth, equall and white.

*Ad ſentent. 32. ſect. 2. de fract.*

*Aph.21. ſect.7.*

Two ſorts of excrements flow from a malign Ulcer.

## CHAP. IV. *Of the Generall cure of Ulcers.*

AN Ulcer is either ſimple or compound. A ſimple Ulcer, as an Ulcer hath one and that a ſimple indication, that is, exſiccation; and that more than in a wound, by how much an Ulcer is moiſter than a wound. There are many indications propoſed for the cure of a compound Ulcer, in reſpect of which *Galen* would have us to keep this order, that we have the firſt regard of the moſt urgent, then of the cauſe, then of that, which unleſſe it be taken away, the Ulcer cannot be healed. By giving you an example you may eaſily underſtand the meaning hereof. Imagin on the inſide of the Leg a little above the ancle, an Ulcer very painfull, hollow, putrid, aſſociated with the rottenneſſe of the bone, circular, having hard and ſwoln Lips, and engirt with the inflammation and *varices* of the neighbouring parts. If you take this to cure, before you do any thing about the Ulcer, unleſſe you be called upon by that which urges, as by vehemency of pain, you muſt firſt uſe generall means by calling and adviſing with a Phyſitian; For in *Galens* opinion, if the whole body require a preparation, then muſt that be done in the firſt place; for in ſome Ulcers purgation only will be ſufficient; in ſome blood-letting; others are better by uſing both means, which is as the cauſe of the Ulcer proceeds from a repletion

The curing of a ſimple Ulcer conſiſts in exſiccation.

*Gal. 7. Meth. cap. 12.*

*Gal. lib. 4. de comp. med. ſecund. gen.*

repletion or ilneſſe of humors. Now by theſe means having taken away the cauſe of the Ulcer, you muſt come to the particular cure thereof, beginning with that which is moſt urgent. Wherefore you muſt firſt aſſwage the pain by application of things contrary to the cauſe thereof, as if it proceed from a Phlegmonous diſtemper, which hath long poſſeſt, diſtended and hardned the part, it muſt be eaſed by evacuation. Firſt, bathing it with warm water, to mollifie and relax the skin, that ſo you may the more eaſily evacuate the contained humors; then ſhall you draw away portion of the matter cauſing the ſwelling and pain by ſcarification, if the Patient ſhall be of ſufficient courage, or elſe by application of horſe-leaches if he be more faint-hearted; and then you ſhall temper the heat thereof by applying *Vnguentum refrigerans Galeni*. To conclude, you ſhall attempt all things which we have formerly delivered (in our treatiſe of Tumors) to take away the ſwelling thereof. When you have brought this to that paſſe you deſire, you ſhall come to thoſe which are ſuch, that it cannot be taken away or healed without them, which ſhall be done by orderly helping the defects againſt nature which were conjoined with the Ulcer, to wit, the rottenneſſe of the bone, which you ſhall help by actuall cauteries; and in the mean while you ſhall draw the Ulcer into another form, to wit, cornered, and you ſhall cut away the callous hardneſſe, and help the rottenneſſe. Then muſt you procure the falling away of the Eſchar, and then provide for the ſcaling of the bone by the means formerly preſcribed, laſtly the mundified Ulcer muſt be filled with fleſh. For generating of fleſh two cauſes muſt concur, the efficient, and materiall; The efficient is, the good temper both of the whole body, as alſo of the Ulcerated part. For this prevailing, there will be an attraction, digeſtion, oppoſition and aſſimilation of the laudable juice to the part affected; verily the laudable temper is preſerved by like things, but the vicious is amended by contraries. The matter to be ſpent upon fleſh is laudable blood, which offends neither in quality, nor quantity. In this regeneration of the fleſh there appear two kinds of excrements, the one more thin and humid called *Sanies*, the other more groſſe termed *Sordes*. Both of theſe for that they are contrary to nature, do therefore hinder the regeneration of fleſh, and therefore muſt be taken away by applying their contraries, as by things drying in the firſt degree, and more ſtrongly or weakly detergent, according to the complexion of the part and the whole body, and the plenty and quality of the excrementitious humor, and the uncleanneſs of the Ulcer. For the part muſt be preſerved by the uſe of the like, but the Ulcer orecome by application of things contrary thereto. After that by natures endeavour and the Chirurgeons help the ulcer is replete with fleſh, it muſt be cicatrized, that is, covered with a callous skin in ſtead of the true and native skin. It may be cicatrized by ſtrewing of very drying powders having very little or no acrimony. Thus Alum and Vitrioll being burnt & made into powder, and thinly ſtrewed upon the part do quickly cicatrize the former fleſhy work. To this purpoſe alſo ſerve, the root of *Ariſtolochia*, Aloes, burnt Lead, Pomegranat pills burnt, Litharge, *Tutia*, and alſo plates of Lead beſmeared with quickſilver, whoſe efficacy for this purpoſe Chirurgeons ſometimes find more certain and powerfull than any other remedies.

The things conducing to the generating of fleſh.

What a Scar is.

Things cauſing cicatrization.

## CHAP. V. *Of a diſtempered Vlcer.*

Signs of a diſtempered ulcer.

BEfore we ſpeak of a diſtempered ulcer, it is meet, leſt that the Chirurgeon take one diſtemper for another, briefly to relate the ſigns of each. You may know that an ulcer is aſſociated with a dry diſtemper by your ſight, as if the ulcer be as it were wrinkled, if it ſend forth little or no moiſture; alſo it is known by touch, if it feel rough and hard. You ſhall correct this diſtemper by humecting medicins, as fomenting it with warm water according to *Galens* opinion, or elſe with *Hydrelæum* (*i.*) Oil and water mixt, but alwayes you muſt firſt purge, if the body ſhall abound with ill humors, or uſe Phlebotomie if the body be plethorick; otherwiſe you ſhall draw more humors into the part than it can bear. Now you ſhall ſo long foment it, untill the fleſh which is about it begin to look red, wax ſoft and moiſt, and the part it ſelf be a little ſwoln. If you proceed further, you will reſolve all the humor which you have drawn thither, and ſo your labour is in vaine. After the fomentation apply ſuch a remedy to the ulcerated part. ℞. *cremoris hordei* ℥ij. *fol. malvæ in aq. coct.* ℥j. *pingued. porci* ℥iſ ß. *mellis com.* ℥ß. *miſce in mortario & fiat unguentum.*

Remedies for a dry diſtempered ulcer.

Signs of too moiſt an ulcer.

You ſhall know a moiſt diſtemper aſſociates the ulcer by the plenty of the excrementitious humor, which the ulcer ſends forth, by the ſpongy and fungous ſoftneſſe and growth of the fleſh about it. You ſhal amend this by drying remedies, ſuch as theſe are, which we tearm ſarcoticks, having alwayes regard to the plenty of the humor, the proper temper of the part, and other indications formerly mentioned. Amongſt other remedies *Galen* much commends Alum water, for it dries, clenſes and corroborates the affected part. Alſo this enſuing fomentation may be applyed to good purpoſe. ℞. *roſar. rub. abſinth. beton. tapſi barbati an. m. j. gallarum, nucum cupreſſi, an.* ℥ij. *aluminis rochæ* ℥j. *fiat decoctio in vino auſtero, inſtituatur fotus.* Then let *Empl. de ceruſſa* or *De minio* be applyed to the ulcer. Alſo I have found by experience that the powder of burnt alum lightly ſtrewed upon the ulcer is very effectuall in this caſe. You ſhal know that an hot diſtemper aſſociates the ulcer by redneſs, or yellowneſſe thereof, by the heat manifeſt to your touch, and the propriety of your pain. Then muſt you have recourſe to refrigerating things, ſuch as *ung. Roſatum Meſ. Refrigerans Gal. Populeon*; ſtoops and clothed dipped in Plantain water, Night-ſhade water, or Oxycrate. I have oft found by experience that ſcarification, or Leaches being applyed, did more conduce than any other remedy. For ſo the chafed blood, which by that means is apt to corrupt, is drawn away, and the part it ſelf is alſo freed of that burden.

*Gal. lib.* 1. *ſimp. cap.* 7.

Signs of a hot diſtempered ulcer.

Signs of a cold diſtempered ulcer.

We know a cold diſtemper by the whitiſh or pale colour, by the touch of the Chirurgeon, and ſpeach of the Patient complaining of the coldneſſe of the ulcerated part. You ſhall correct this by applying and putting bottles filled with water about the part, or elſe ſwines bladders half filled with the following decoction. ℞. *origani, pulegii, chamæmeliloti, an. m. j. abſinth. majoranæ, ſalviæ, roriſmar. an. m.* ß. *fiat.*

*decoctio*

*decoctio in vino generoso, addendo aquæ vitæ quod sufficit.* Also the Ulcer may be conveniently fomented with spunges dipped in the same decoction, and let there be applyed thereto *Empl. Oxycroceum; emp. de meliloto; de Vigo cum mercurio*, and *sine mercurio*. But if a mixt and compound distemper be joined to the Ulcer, the medicins must in like manner be mixt and composed. The residue of the Chirurgeons care and pains must be spent upon the proper and peculiar cure of the Ulcer, as it is an Ulcer; which we said in the former Chapter was contained in detersion, regenerating flesh and cicatrization thereof.

## CHAP. VI. *Of an Ulcer with pain.*

THere oft-times so great pain accompanieth Ulcers, that it calls thereto the counsell of the Physitian. Wherefore if it proceed from any distemper, it shall be taken away by remedies proper against that distemper, such as we mentioned in the former Chapter. But if it do not so cease, we must go on to Narcoticks. Such are cataplasms of the leaves of Mandrakes, Water lillies, Henbane, Nightshade, Hemlock, the seeds of Poppy and oils of the same; to which also may be added *Opium*, *Populeon*, and other things of like faculties. But if a malign acrimony and virulency of an humor corroding and eating the flesh lying under it and the lips about it, cause and make the pain, you shall neither assuage it by anodynes, nor Narcoticks; for by application of gentle medicins it will become worse and worse. Wherefore you must betake you to Cathæreticks; For strong medicins are fittest for strong diseases. Wherefore let a pledget dipped in strong and more than ordinarily powerfull *Ægyptiacum*, or in a little oil of Vitriol, be applyed to the Ulcer; for these have power to tame this raging pain, and virulent humors. In the mean season let refrigerating things be put about the Ulcer, lest the vehemency of acrid medicins cause a defluxion.

The matter of Narcotick cataplasms.

Cathæreticks have power to assuage pain.

## CHAP. VII. *Of Ulcers with overgrowing or proudnesse of flesh.*

VLcers have oft-times proud or overgrowing flesh in them, either by the negligence of the Chirurgeon, or fault of the Patient. Against this, drying and gently eating or consuming medicins must be applyed; such as are Galls, *cortex thuris*, Aloes, *Tutia*, Antimony, *Pompholix*, Vitriol, Lead, all of them burnt and washt if need require. Of these powders you may also make ointments with a little oil and wax; but if the proud flesh, as that which is hard and dense, yeeld not to these remedies, we must come to caustick, or else to iron, so to cut it off. For in *Galens* opinion, the taking away of proud flesh is no work of nature, (as the generating, restoring and agglutinating of the flesh is) but it is performed by medicins which dry vehemently, or else by the hand of the Chirurgeon; wherefore amongst the remedies fit for this operation, the powder of Mercury with some small quantity of burnt Alum, or burnt Vitriol alone, seem very effectuall to me. Now for the hard and callous lips of the Ulcer, they must be mollified with medicins which have such a faculty, as with Calves, Goose, Capons or Ducks grease, the oils of Lillies, sweet Almonds, Worms, Whelps, *Oesipus*, the mucilages of Marsh-mallows, Linseed, Fænugreek seed, Gum *Ammoniacum*, *Galbanum*, *Bdellium*, of which being mixed may be made Emplaisters, unguents, and liniments: or you shall use *Empl. Diachylon*, or *de Mucilaginibus*, *De Vigo cum mercurio*. To conclude, after we have for some few dayes used such like remedies, you may apply to the Ulcer a plate of Lead rubbed over with Quicksilver; for this is very effectuall to smooth an Ulcer and depresse the lips: if you shall prevail nothing by this means, you must come to the caustick, by which if you still prevail nothing, for that the lips of the Ulcer are so callous that the caustick cannot pierce into them, you must cleave them with a gentle scarification, or else cut them to the quick, so to make way, or as it were open a window for the medicin to enter in, according to *Galen*. Neither in the interim must you omit *Hippocrates* his advice, which is, that by the same operation we reduce the Ulcer if round, into another figure, to wit, long or triangular.

Things wasting superfluous flesh.

*Lib.3. Meth. cap.6.*

For the callous lips of Ulcers.

*Lib.4. Meth. cap.2.*

## CHAP. VIII. *Of an Ulcer putrid and breeding Worms.*

WOunds are divers times bred in ulcers, whence they are called wormy ulcers; the cause hereof is the too great excrementitious humidity prepared to putrefie by unnaturall and immoderate heat. Which happens, either for that the ulcer is neglected, or else by reason of the distemper and depraved humors of all the body, or the affected part; or else for that the excrementitious humor collected in the ulcer, hath not open and free passage forth; as it happens to the ulcers of the ears, nose, fundament, neck of the womb, and lastly, to all sinuous & cuniculous ulcers. Yet it doth not necessarily follow that all putrid ulcers must have worms in them; as you may perceive by the definition of a putrid ulcer which we gave you before. For the cure of such ulcers after generall means, the worms must first be taken forth, then the excrementitious humor must be drawn away, whence they take their originall. Therefore you shall foment the ulcer with the ensuing decoction, which is of force to kill them; for if any labour to take forth all that are quick he will be much deceived; for they oft times do so tenaciously adhere to the ulcerated part, that you cannot pluck them away without much force and pain. ℞. *absinth. centaur. majoris, marrubii, an. M. j. fiat decoctio ad* ℔ *ß. ff. in qua dissolve aloes* ʒ ß. *unguenti ægyptiaci* ʒ *j.* Let the ulcer be fomented and washed with this medicin, and let pledgets dipped herein be put into the ulcer; or else if the ulcer be cuniculous or full of windings, make injection therewith which may go into all parts thereof.

The cause of worms breeding in Ulcers.

A fomentation to kill the worms.

*Achigenes* much commends this following medicin. ℞. *Ceruſæ, polii montani, an.* ʒ ß. *picis navalis liquidæ quantum sufficit, misce in mortario pro linimento.* If the putrefaction be such that these medicins will not suffice for the amendment thereof, you must come to more powerfull, or to cauteries also, or hot Irons, or

*Gal.4. comp. med.*

to

to section; yet you must still begin with the more gentle, such as this of *Galens* description. ℞. *ceræ*, ℥ij. *ceruſæ* ℥j. *olei roſ.* ℥ij. *ſalis amnon.* ℥ß. *ſquam æris* ʒij. *thur. alum. æruginis, malicor. calcis vivæ, an.* ʒj. *fiat emplaſtrum.* Or ℞. *terebinth. lotæ* ℥ij. *ceræ albæ* ℥ß. *liquefiant ſimul addendo ſublimati,* ʒß. *ſalis torrefacti, & vitrioli calcinati, an.* ʒj. *fiat mundificativum.* Or you must use our *Ægyptiacum* alone, which hath Sublimate entring into the composition thereof; but in the interim the circuit of the Ulcer must be defended with refrigerating and defensative things for fear of pain.

## CHAP. IX. *Of a sordid Ulcer.*

A Sordid Ulcer after the cure of the body in generall, shall be healed with detergent medicins; the indication being drawn from the grosse and tough excrement, which with the excrementitious *sanies*, as it were besieging, and blocking up the ulcerated parts, weakens and as it were dulls the force of medicins though powerfull, which causeth us to begin the cure with fomentations and lotions, as thus. ℞. *Lixivii com.* ℔j. *abſinth. marrub. apii, centaur. utriuſque, hypericonis, an. M. ſſ. coquantur, colatur æ, quæ ſufficiat, adde mellis roſati* ʒj. *unguenti ægyptiaci* ℥ß. *fiat fotus.* Then use the following detersive medicin: *R. ſucci appii, & plantag. an.* ℥ij. *mellis com.* ℥j. *terebinth.* ℥iß. *pul. Ireos Florent. & aloes an.* ℥ß. *fiat medicamentum.* The Chirurgeon must well consider, at how many dressings he shall be able to wash away the grosse *sordes* or filth sticking close to the Ulcer, and dry up the excrementitious *sanies*. For oftimes these things may be done at one dressing; but in others who have more quick sense or feeling, not so soon. But when the Ulcer is freed of such grosse *Sordes* or filth, you must forbear to use more acrid things for fear of pain, defluxion, inflammation, and erosion, whereby the Ulcer would become more hollow. Wherefore then we shall be content to apply remedies which dry and clense without acrimony that we may so help natures indeavours in generating flesh. Such remedies are the pouders of Aloes, Mastich, Myrrh, Orris, Litharge, Antimony, roots of Gentian, Barly flower, and the like, which being strewed upon the Ulcer, you shall cover it with Lint, and put over that a plate of Lead, rubbed over with quick silver; and you shall put on these detersives and deficcatives more or lesse strong, as you shall find it requisite and necessary. For the too plentifull use of drying and detersive things, doth in time hollow the Ulcers, whereby it comes to passe that in short time in like sort, a greater quantity of *Sanies* flows from the Ulcer, the proper substance of the flesh being dissolved by the force or acrimony of detersive medicin; as also the proper alimentary humor, which flowed to the part, being in the like sort, a greater quantity of *Sanies* flowed from the Ulcer, the proper substance of the flesh being dissolved by the force or acrimony of the detersive medicine, as also the proper alimentary humor, which flowed to the part, being in like sort defiled: which thing beguiles the unskilfull Chirurgeon. For by how much he sees the Ulcer flow more plentifully with *Sanies*, he endeavours by so much the more to exhaust and dry up with more acrid medicins these humidities as if they were excrementitious; But *Galen* hath long ago admonished us to take heed hereof, setting forth a History of a certain Emperick who dressing a sordid Ulcer with a green, acrid and eating medicin, dissolved the flesh, and so consequently made the Ulcer more hollow, and caused more pain and defluxion; whereby it happened that continually adding more acrid medicins, he continually by his ignorance and unskilfulnesse increased the colliquation of the flesh, the largenesse of the ulcer and excrementitious humidity. Wherefore we must take speciall care whether the sordid Ulcer grow each day worse, by its proper fault and the impurity of the whole body besides, or else by the colliquation of the flesh and corruption of the benign and alimentary humor sent thither for the nutrition of the part, by the too frequent and unskilful use of too acrid a medicin. You may conjecture this by the increase of the pain without reason, and by the heat and rednesse of the lips of the Ulcer. Therefore you must principally have regard to this, that you give each of your Patients his fit measure, that is, a convenient and agreeable medicin to each of their strengths, taking indication from the strength, distemper, and consistence of the whole body and affected part; for there is a great deal of difference whether you apply a medicin to a plowman or labourer, or to an Eunuch and woman, or whether to the Leg, or eyes. For these medicins which to a dense and hard body and part are only detergent and drying, the same are to delicate and tender bodies and parts cathæretick and eating, by colliquation of the flesh, and corruption of the nourishment, making an increase of *Sordes* or filth; on the contrary those things which do laudably and sufficiently clense the flesh in a soft body and dry up the *Sanies*, these same things applyed to a hard body encrease the *Sordes* and *Sanies* by suffering them to breed, neither are they of sufficient power to wash away the tenacious impurity of a dense body. Wherefore the skilfull Chirurgeon will see when he must betake himself from too strongly cleansing and eating medicins, to these which are more milde.

*A detergent lotion.*

*Detergent medicins without acrimony.*

*A caution very observable in use of detergent things.*

*A distinction to be observed concerning the impurity of ulcers.*

*Diligent regard must be had of the patients bodies and the affected part.*

## CHAP. X. *Of a virulent, eating and malign Ulcer which is tearmed* Cacoethes, *and of a Chironian Ulcer.*

*How virulent and eating ulcers differ. Gal. lib. 4. de comp med. ſec. genera.*

VIrulent and eating Ulcers differ not unlesse in *magis* and *minus*, for we tearm it a virulent Ulcer, which sends forth a virulent *sanies*, which is properly called *Virus*. This *Virus*, or virulency, when it becomes more malign, gnawes and feeds upon the parts which lye under, and are adjoyning to the Ulcer, and makes an eating Ulcer. Such Ulcers are by *Galen* called *Dyſepulotica*, that is, difficultly to be cicatrized; for, saith he, it happens that the Ulcer is Dysepulotick, either for that the part affected may be vitiated either in the habit or temper thereof, so that it may corrupt the humor which flows thither; such an Ulcer is by a particular name tearmed *Cacoethes*; or for that by reason of the evill quality of the blood flowing thither and eating the part, the part affected being too moist cannot heal up. He further adds that a Chironian

*How a Chironian ulcer differs from an eating, see before, Cap. 2.*

ulcer

ulcer is far more malign than these Ulcers which are termed *Cacoethe*. For the cure; by reason that all these Ulcers have a large extent, for some are more malign and ill to be cicatrized than othersome; it is also necessary to have divers medicins ready and at hand distinct both in their faculties and the degrees thereof, so that it is no marvail if they oft fail of their purpose, who with the same medicin dresse and think they shall heale all malign Ulcers. This following medicin described by *Asclepiades* is much commended by *Galen*. ℞. *squamæ æris, æruginis, rasæ, an.* ℥j. *ceræ* ℔.ß. *resinæ laricis.* ℥jß. *quæ liquari possunt aridis affundantur*, and make an emplaster to be laid only upon the Ulcer; for you must lay a defensative about the Ulcer for fear of inflammation. But *Galen* saith that the following Epulotick of *Primion* excels the rest, as that which to desperate Ulcers (which many have taken in hand and left as uncurable,) was of certain and approved use. ℞ *foreos* ℥iij. *aluminis scissilis, calcis vinæ, an.* ℥ij. *thuris gallarum, an.* ℥iiij. *ceræ.* ℔.j. & ℥iij. *sevi vitulini* ℔.j. & ℥vij. *olei veteris quantum sufficit, fiat emplastrum.* *Gal. lib. 4. see Gen. Cap. 5.* *Gal. lib. 4. de comp. med. see Gen. Cap. 6.*

## CHAP. XI. *An advertisement to the young Chirurgeon touching the distance of times wherein malign Ulcers are to be dressed.*

TO shew the use of *Asclepiades* his medicins described in the former Chapter, and convince the error of these Chirurgeons, who think they do well for their Patients, if they twice or thrice on a day dresse malign ulcers; I have here thought good to digresse a little from my purpose and to interpose *Galens* authority. Rightly (saith *Galen*) hath *Asclepiades* added these words to the formerly described medicin: And loose this after three dayes, and foment the ulcer, and fasten the same emplaister being washed, and apply it again; for unlesse the medicin adhere long to the skin, it will do no good. Which thing notwithstanding many Physitians have been ignorant of, thinking if they wiped away the *sanies* from the ulcer thrice on a day, they should do better than those who did the same but twice a day. But those who dresse it but once a day, are reproved by the Patients as negligent. But they are much mistaken; for you must remember, as we have delivered in most of our writings, that the qualities of al neighbouring bodies do mutual actuate and affect each other in some degree, although the one thereof be much more powerfull; for by this reason in space of time they be come somewhat alike, though they otherwise differ much; But when the quality of the medicin shall be like the *species* to the body to be cured, there follows the better successe. Wherefore he which moved by these reasons first appointed to use the emplaister formerly applyed, is worthy of commendations; and we ought to follow him much the rather, seeing that which he found out by reason, is approved by experience. Neither did he unadvisedly command to foment the wound every third day, that is, every dressing; for seeing it is a powerfull medicin, therefore it stands in need of mitigation. Thus much *Galen*, whose opinion grounded on reason, he can again confirm with another reason. It is already sufficiently known, that medicins can do nothing in us unlesse by the force of the native heat, which stirs up the faculty of the medicin to operation. But in ulcers which are absolutely malign, the native heat of the affected part is very languid, being broken and debilitated by the presence of the preternaturall heat; so that it stands in need of a great space of time to actuate the vertue and faculty of the medicin. Wherefore, if in that time, when as the native heat hath much moved and stirred up the faculty of the medicin, the ulcer be loosed or opened, and that emplaister cast away which was laid upon the part, and a fresh one laid in stead thereof; the heat implanted in the part is either dissipated by the contact of the air, or is weakened and driven in; and that endeavour which was made by the emplaister was to no purpose, being as it were stopped in the midst of the course. But a new emplaister being laid on, the heat of the part must undergo a new labour, so to stir up the faculty to bring it to act. *Galens* reason further explained.

For all medicins are, what they are, in faculty. Equall to this is their error, who by too oft renewing their emplaisters on the same day; do too powerfully clense; for so they do not only take away the excrementitious humors, both *sordes* and *sanies*, but also the alimentary juice; to wit, the *Rob*, *Cambium*, and *Gluten*, which are the next matter for procreating of laudible flesh. Wherefore it is not good to dresse ulcers so often in one day, and to loose them to apply new emplaisters, unlesse some greivous symptome (as pain) force us to do it, which requires to be asswaged and mitigated by the often changeing and renewing of Anodyne medicins. *Medicins are only such in faculty.*

## CHAP. XII. *How to bind up Ulcers.*

FOr the binding up of ulcers, you must alwayes begin your bandage at the ulcer. Now the Rowler must be so large that it may not only cover and comprehend the ulcer, but also some portion of the adjacent parts above and below; and let it presse the ulcer with that moderation, that it may only presse out the excrementition humors. For so the ulcer will become dry, and consequently more neer to healing, as it is observed by *Hippocrates*. Let this be the measure of your binding, that it be neither too strait for hence would ensue pain and defluxion; nor too lax, for such is of no use. You may moisten your boulsters and Rowlers in oxycrate or in red and astringent wine, especially in Summer; when you have bound it up the part must be kept quiet. For according to *Hippocrates*, those who have an ulcer in the leg, ought neither to stand, nor sit, but to lye on a bed. Wherefore when the legs are ulcerated the arms must be exercised, by handling, lifting up and casting downe of divers things. But on the contrary if the arms be ulcerated, the legs must be exercised with walking, or frictions from above downwards, if the Patient cannot endure to walk. So the humors and spirits which with more violence and greater plenty run down to the part affected, may be drawn back and diverted. The beginning of your binding must be at the Ulcer. *Hip. lib. de alt.* Revulsion into contrary parts.

## CHAP. XIII. *Of the cure of particular ulcers, and first of those of the eyes.*

4. *Meth.* For that (in *Galens* opinion) the divers indication in curing diseases is drawn from the condition of the part, to wit, the temper, complexion, site, figure, use, dull or quick sense; Therefore having briefly handled the generall cure both of simple and compound and implicit ulcers, I think it fit to treat of them now as they are distinguished by the parts, beginning with these of the eyes. These according to *Celsus*, are sometimes caused by pustules, or a sharp defluxion which frets or eats in sunder the coats thereof, or else by a stroak.

*Lib. 6. cap. 6. lib. 3. Botryon. Cæloma. Argemon. Epicauma.* *Paulus* sets down these differences of the ulcers of the eyes; If (saith he) a small, little and hollow ulcer be upon the horny coat, it is by the Greeks tearmed *Botryon*; but if it be broader and lesse deep, it is termed *Cæloma*; about the circle of the *Iris* or Rainbow, it is called *Argemon*. If it be crusty and sordid, it is termed *Epicauma*. These in generall require the same cure as the former, that is, to be mundified, incarnated, dryed and cicatrized; but the part affected indicates more gentle medicins. Wherefore having purged the Patient and taken some blood both from his arm, as also from his veins and temporall Arteries, and bathed him if it be needfull; to divert the defluxion you shall to his shoulders apply cupping glasses with scarification; or else bread newly drawn out of the oven, and sprinkled with *aqua vitæ* or some good wine shall be applyed to the originall of the spinall marrow. But you shall apply to the forehead and temples an astringent emplaister made of *emplastrum contra rupturan, ung. Comitissæ,* and *resiccativum rubrum* mixed together. But this ensuing *Collyrium* described by *Celsus* and approved by *Hollerius*, shall be dropped into the eye. ℞ *æris usti, cadmiæ ustæ & lotæ, an.* ℥j. *ex aqua fingatur collyrium quod liquore ovi dissolvatur.* But in the mean time you must diligently observe whether you put the eye to any great pain. Wherefore now and then by putting anodyne medicins thereto, it will be good to comfort it. Also you may make *collyria* of the decoction of Plantain, fænugreek, wormwood, with a little quantity of Sugar-candy, *tutia*, gum *tragacanth*, myrrh and vitrioll dissolved therein. When the ulcer is mundified, the following sarcotick will be of good use. ℞ *sarcocollæ in lacte muliebri nutritæ,* ʒiij. *pul. diaireos simplicis, gum. arabici, tragacanth. an.* ʒß. *mucilaginis fænugræci quantum sufficit ut inde fiat collyrium.* But you must note that for moist ulcers, powders are more convenient than *Collyria*. When the ulcer is plained or filled with its proper flesh, it may be cicatrized with the following *collyrium*. ℞ *tutiæ, cadmiæ ut decet præparatæ, ceruſæ, antimonii, olibani, an.* ʒß. *myrrhæ, ſarcocollæ, ſanguinis Draconis, aloes, opii, an,* ℈ß. *cum aqua plantaginis fiat collyrium*; or the powder only may be conveniently strewed thereon.

A *Collyrium* to cleanse the ulcers of the eyes.

A sarcotick *Collyrium.*

An epulotick *Collyrium.*

*Lib. 6. cap. 6.* *Celsus* hath noted that the cicatrizing of the eyes is incident to two dangers, that is, lest they be too hollow, or else too thick. If too hollow, they must be filled by the following remedy, ℞ *Papaveris lachrymæ,* ʒß. *ſagapeni, opopanacis, an.* ʒß. *æruginis* ʒj. *cumini* ʒiij. *piperis* ʒij. *cadmiæ lotæ & ceruſæ, an.* ʒjß. *cum aqua pluviali fiat collyrium.* But if the scars be thick or grosse, the following remedy will extenuate them. ℞ *cinamon. acaciæ, an.* ʒß. *cadmiæ elotæ, croci, myrrhæ, papaveris lachrymæ, gum. arabici, an.* ʒj. *piperis albi, thuris, an.* ʒiß. *æris combuſti,* ʒiij. *cum aqua pluviali fiat collyrium.* But if the scar be upon the *cornea* or horny coat, so that it cover the *pupilla* or sight, the sight will be intercepted by the denseness of the membrane. Here you must also observe, that the scars that are on the *Cornea* are white, but these on the *Adnata* are red, because this is spred over with more little veins than that.

A *Collyrium* for hollow scars.

The scars of the Horny coat are white, and these of the *Adnata* red.

## CHAP. XIIII. *Of the* Ozæna *and Ulcers of the Nose.*

*Lib. 6. cap. 8. Gal. lib. 3. de comp. med. secund. locos cap. 3.* THe *Ozæna* is a deep and stinking ulcer in the inside of the nose, sending forth many crusty and stinking excrements. *Celsus* saith that such ulcers can scarsly be healed. It is caused (as *Galen* saith) by the distillation of acrid and putrid humors from the head into the nostrills about the mammillary processes. For the cure, the Patient must eat sparingly, and his meat must neither be sharp nor strong; the humor being prepared must be purged; the head dryed and strengthened, that so it may neither admit the excrementitious humors, nor send them down; then must we come to the part affected with the ulcer. The ulcer must be dryed with a repelling medicine, such as is the juice of Pomegranats boiled to the half in a brasse vessell; the powder of Calamint, Cresses, white Hellebore, the juice of Cresses with Alum and other things which you may read in *Celsus*. *Galen* out of *Archigenes* wishes, to draw up into the nostrills the juice of Calamint, or that the Calamint it self being dryed, and made into powder, may be blown with a quill into the nose. Others use this following powder. ℞ *ros. rub. mint. calam. arom. rad. angelicæ, gentian. macis, cariop. an.* ʒß. *camph. ambræ, an. gr.* iiij. *moſch. gr.* vj. *fiat pulvis ſubtiliſſimus. Manardus* writes that the Urine of an Asse, though a nasty medicine, is an excellent remedy in this affect. But if the inveterate and contumacious evill do not yeeld to these remedies, then you must have recourse to Coprose, Verdigreece, *ſal ammoniacum*, and Alum with Vinegar. It divers times happens that the ulcer spreading on, comes to take hold of the *Ossa ethmoidea* or five-like bones; in which case you must not forcibly pluck them out, but refer the whole business to nature, and expect when they shall come away of themselves, making in the mean while injections into the nostrills of *aqua vitæ*, wherein Cephalick powders have been steeped for the greater drying.

The cure.

*Lib. 20. epiſt. 5.* An injection when the *Ozæna* shall come to the *Ossa Ethmoidea.*

## CHAP. XV. *Of the Ulcers of the mouth.*

*Aph. 24. ſect. 3. Celſus lib. 6. cap. 11. Gal. com. ad 3. lib. epidem.* OF this tribe are the *Aphthæ*, ulcers familiar to little children, according to *Hippocrates*. They oft-times begin at the gums, and by the palat of the mouth creep into the *uvula*, throtle, and over all the mouth, as *Celsus* saith. *Galen* makes two kinds of *Aphtha's*; the one of easie cure, such as that which usually troubles children by reason of the acrimony of the nurses milk; the other is malign by reason of an afflux of an evill humor (that is, venenate and malign) into the mouth.

mouth. For the cure, it ſhall be good to abſtain from all acrid things, and if it be a ſucking child, it will not be amiſſe to temper the nurſes milk with refrigerating meats, bathing the whole body, and fomenting the dugs with warm water; for all the members in children are moſt tender, and as it were mucous, and their mouths are unaccuſtomed to meats and drinks. For topick medicins, you muſt make choice of ſuch which may quickly and readily work the effect; for here the condition of the affected part is ſuch, that they cannot long remain and adhere thereto. Therefore if the ulcer be malign, it muſt be lightly touched with *aqua fortis* which hath been uſed in ſeparating metalls and which beſides is tempered with ſix parts of common water. You may for the ſame purpoſe uſe the oils of Vitrioll, Sulphur, Antimony, Mercury water and the like. *Aetius* wiſhes you to touch and correct ſuch ulcers with a lock of wooll dipped in ſcalding oil, and ſo faſtned to the end of a probe, untill they wax white and become ſmooth or plain. For ſo their eating and ſpreading force will at length be bridled, and laudable fleſh grow up in place of that which is eaten. After ſuch burning it will be good to waſh the mouth with the following gargariſm, which alſo of its ſelf alone will ſerve to cure Aphtha's, which are not malign. ℞ *hordei integri p.j. plantag. ceterach, piloſellæ, agrimoniæ, an. M.j. fiat decoctio ad* ℔*.j. in qua diſſolve mellis roſati* ℥*j. diamoron.* ℥ß. *fiat gargariſma.* You may alſo make other gargles, of Pomegranate pills, Balauſties, Sumach, Berberies, red roſes being boyled, and diſſolving in the ſtrained liquor *Diamoron* and *Dianucum* with a little Alum. For *Galen* writes, that ſimple ulcers of the mouth are healed with things which dry with moderation; now *Diamoron* and *Dianucum* are ſuch. But others ſtand in need of ſtrong medicins, with ſuch like. If the palat be ſeiſed upon, we muſt uſe the more diligence and care; for there is danger, leſt being the part is hot and moiſt, the bone which lyes under which is rare and humide, may be corrupted by the contagion and fall away, and the voice or ſpeech be ſpoiled. If the ulcer be pocky, omitting the common remedies of ulcers, you muſt ſpeedily betake your ſelf to the proper antidote of that diſeaſe, to wit, quick-ſilver. Fiſtulous ulcers often take hold on the Gums, whence the root of the next tooth becomes rotten, and ſo far that the acrimony of the *Sanies* oft-times makes its ſelf a paſſage forth on the outſide under the chin; which thing puts many into a falſe conceit of the *ſcrophulæ* or Kings evill, and conſequently of an uncurable diſeaſe. In ſuch a caſe *Aetius*, and *Celſus* counſell is, to take out the rotten tooth, for ſo the *Fiſtula* will be taken away, the Gum preſſing and thruſting its ſelf into the place of the tooth which was taken forth; and ſo the cauſe nouriſhing the putrefaction being taken away, (that is, the tooth) the reſt of the cure will be more eaſy. The ulcers of the tongue may be cured by the ſame remedies by which the reſt of the mouth; yet thoſe which breed on the ſide thereof endure very long, and you muſt look whether or no there be not ſome ſharp tooth over againſt it, which will not ſuffer the ulcer in that place to heal; which if there be, then muſt you take it away with a file.

The cure.

A gargariſm for the *Aphthæ*. *Lib. 6. meth. Cap. 10.*

Ulcers of the palat muſt be quickly and carefully dreſſed. *Aetius Lib. 6. cap. 3. Celſus lib. 6. cap. 13.*

## CHAP. XVI. *Of the Vlcers of the Ears.*

VLcers are bred in the auditory paſſage both by an externall cauſe, as a ſtroak, or fall, as alſo by an internall, as an abſceſs there generated. They oft-times flow with much matter, not there generated, for ſuch ulcers are uſually but ſmall and beſides in a ſpermatick part, but for that the brain doth that way disburden its ſelf.

Their cauſes.

For the cure, the chief regard muſt be had of the antecedent cauſe, which feeds the ulcer, and it muſt be diverted by purging medicins, Maſticatories, and Errhines. This is the form of a Maſticatory. ℞. *Maſtich.* ℥*j. ſtaphi ſagr. & pyreth. an.* ℈*j. cinam. & caryoph. an.* ℥ß. *fiant Maſticatoria, utatur mane & veſperi.* But this is the form of an Errhin. ℞ *ſucci betonic. mercurial. & meliſſæ, an.* ℥ß. *vini albi* ℥*j. miſce & frequenter naribus attrahatur.* For topick medicins we muſt ſhun all fatty and oily things, as *Galen* ſet down *in Method. medendi*, where he finds fault with a certain follower of *Theſſalus* who by uſing *Tetrapharmacum*, made the ulcer in the ear grow each day more filthy than other, which *Galen* healed with the Trochiſces of *Andronius* diſſolved in Vinegar, whoſe compoſure is as followeth. ℞ *balauſt.* ℥*ij. alumin.* ℥*j. atrament. ſutor.* ℥*ij. myrrhæ* ℥*j. thur. ariſtoloch. gallarum, an.* ℥*ij. ſalis Ammon.* ℥*j. excipiantur omnia melicrato & fiant trochiſci.*

The cure.

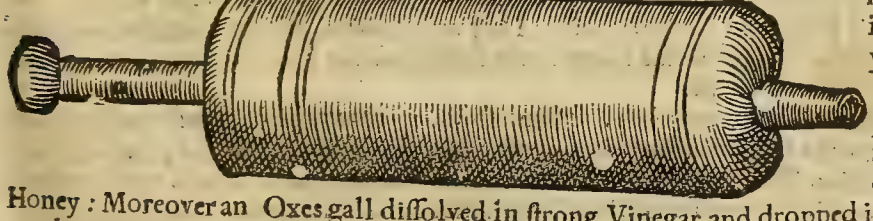
A maſticatory.

An Errhin.

The compoſition of *Andronius* his trochiſces.

Scales of Iron.

*The figure of a* Pyoulcus, *or matter-drawer.*



*Galen* in the ſame place witneſſeth, that he hath healed inveterate ulcers & of two years old of this kind, with the ſcales of Iron made into powder, and then boiled in ſharp Vinegar untill it acquired the conſiſtence of Honey: Moreover an Oxes gall diſſolved in ſtrong Vinegar, and dropped in warm, amends and dryes up the putrefaction wherewith theſe ulcers flow. Alſo the ſcales of Iron made into powder boyled in ſharp Vinegar, dryed and ſtrewed upon them. But if the ſtraitneſs of the paſſages ſhould not give leave to the matter contained in the windings of the ears to paſſe forth, then muſt it be drawn out with an Inſtrument thereupon called a *Pyoulcus*, or matter-drawer, whereof this is the figure.

Of the *Pyoulcos Galen* makesmention 2 *ad Glauconem.*

## CHAP. XVII. *Of the ulcers of the windpipe, weazon, ſtomach and Guts.*

THeſe parts are ulcerated either by an externall cauſe, as an acrid medicine, or poyſon ſwallowed down; or by an internall cauſe, as a malign fretting humor which may equall the force of poyſon generated in the body, and reſtrained in theſe parts. If the pain be encreaſed by ſwallowing or breathing, it is the ſign of an ulcer in the weazon, or windpipe joining thereto. But the pain is moſt ſenſibly felt when as that which is ſwallowed is either ſour or acrid, or the

The Cauſes. Signs.

air breathed in, is more hot or cold than ordinary. But if the cause of pain lye fastned in the stomach, more grievous symptomes urge; for sometimes they swound, have a nauseous disposition and vomiting, convulsions, gnawings, and pain almost intolerable, & the coldness of the extream parts; all which when present at once, few scape unless such as are young, and have very strong bodies. The same affect may befall the whole stomach, but because both for the bitterness of pain, and greatness of danger, that ulcer is far more grievous which takes hold of the mouth of the Ventricle, honoured by the Ancients with the name of the Heart; therefore Physitians do not make so great a reckoning of that which happens in the lower part of the stomach. Now we know that the Guts are ulcerated if *Pus*, or much purulent matter come forth by stool; if blood come that way with much griping; for by the *Pus* staying and as it were gathered together in that place, there is as it were a certain continuall *Tenesmus*, or desire to goe to stool. Now all such ulcers are cured by meats and drinks, rather than by medicins, according to *Galen*. Therefore you must make choice of all such meats and drinks as are gentle, and have a lenitive faculty, shunning acrid things; for *Tutia*, Lytharge, Ceruse, Verdigreece & the like, have no place here, as they have in other ulcers. But when as the ulcer shall be in the Gullet or Weazon, you must have a care that such things may have some viscidity or toughnesse, and be swallowed by little and little, and at divers times; otherwise they will not much avail, because they cannot make any stay, in these commune wayes of breath and meat; therefore they presently slip down and flow away; wherefore all such things shall be used in form of an *Eglegma*, to be taken lying on the back, and swallowed down by little and little, opening the muscles of the throat, lest the medicin passing down suddainly and in great quantity, cause a cough, a thing exceeding hurtfull to these kinds of ulcers. When they must be clensed, you shall have crude honey, which hath a singular faculty, above all other detergent things, in these kind of ulcers. But when they can conveniently swallow, you shall mix Gum Tragacanth dissolved in some astringent decoction. In ulcers of the stomach all acrid things (as I have formerly advised) must be shunned, as those which may cause pain, inflammation and vomit, and besides hinder the digestion of the meat. Therefore let them frequently use a ptisan, and sugred gellyes wherein gum Tragacanth, and bole Armenick have been put, the decoction of Prunes, Dates, Figs, Raisons, Honey, Cowes milk boyled with the yolks of egs, and a little common honey. When they are to be agglutinated, it will be convenient to make use of austere, astringent, and agglutinative things which want all acrimony, and ungratefull taste, such as are *Hypocistis*, Pomegranate flowres and pills, *terra sigillata*, *sumach*, *acacia*, a decoction of quinces, the Lentisk wood, the tops of Vines, of brambles, myrtles, made in astingent wine, unlesse there be feare of inflammation. Their drink shall be *Hydromel* water with Sugar, syrup of Violets and Iujubes. Honey mixed with other medicins is a very fitting remedy for ulcers of the guts and other parts more remote from the stomach; for if you shall use astringent medicins alone of themselves, they will stick to the stomach; neither will they carry their strength any further; but honey mixed with them, besides that it distributes them to the rest of the body, and helps them forwards to the affected parts, also clenses the ulcers themselves. Here also Asses milk may with good success be used in stead of Goats or Cowes milk. The use of a vulnerary potion is also commendable, if so be that it be made of such hearbes and simples, as by a certain tacit familiarity have respect to the parts affected. But the ulcers of the Guts have this difference amongst themselves, that if the greater guts be affected, you may heal them with a Clyster and injections, made also sharp to correct the putrefaction; such as are those which are made of Barly water, or wine with *Ægyptiacum*. But if the small guts be ulcerated, they must be rather healed by potions and other things taken at the mouth, for that (as *Galen* saith) these things which are put up into the body by the Fundament, do not commonly ascend to the small or slender guts, but such as are taken at the mouth cannot come unlesse with the losse of their faculty, so far as the great guts.

*Gal. lib. 5. de loc. affect. cap. 5.*

*Lib. 4. & 5. Method.*

The cure.

How to take medicins for ulcers of the throat.

Why acrid things must be shunned in these ulcers.

How powerfull Honey is to cure such kind of ulcers.

*Ægyptiacum* good for the ulcers of the greater guts *Lib. 5. meth.*

## CHAP. XVIII. *Of the Vlcers of the Kidneys and Bladder.*

Causes.

Signes.

SUlcers are caused in the Kidneys and Bladder, either by the use of acrid meats, drinks, or medicins, as *Cantharides*; or else by the collection of an acrid humor bred in that place, sent or faln thither; or else by the rupture of some vessell, or an abscesse broken and degenerated into an ulcer, as it sometimes comes to passe. They are discerned by their site, for the pain and heavinesse of ulcers of the Reins comes to the Loins, and the *Pus* or matter is evacuated well and throughly mixed with the Urine.

*Hip Aphor. 81. sect. 4 Aphor. 76. sect. 4. Aphor. 77. sect. 4.*

Neither doth the *Pus* which flows from the reins stink so ill, as that which is cast forth of the bladder; the reason is, for that the bladder being a bloodlesse, fleshlesse and membranous part, hath not such power to resist putrefaction. That *Pus* which flowes from the Kidneys never flowes without water; and although by long keeping in an Urinall, it at length subsides or falls to the bottome, and may be seen separated; yet when it is first made, you may see it perfectly mixed with the Urine; but that *Pus* which flowes from the bladder is oft-times made alone without Urine; and usually it comes to passe that the *Pus*, or matter which flowes from the ulcerated Kidneys, hath in it certain caruncles, or as it were haires, according to the rule of *Hippocrates*. Those who in a thick Urine have little caruncles, and as it were hairs come forth together therewith, they come from their Kidneys; but on the contrary those who have certain bran-like scales come from them in a thick Urine, their bladder is scabby or troubled with a scabby ulcer.

The cure.

Why we must shun strong purges.

For the cure; it is expedient that the belly be soluble either by nature or Art, and the use of mollifying Clysters. And it is good to vomit sometimes, so to draw back the humors by whose conflux into the affected part the ulcer might be fed and made more sordid and filthy. You must beware of strong purgations, lest the humors being moved and too much agitated, the matter fit to nourish the

ulcer

Ulcer may fall down upon the kidnies or bladder. The ensuing potion is very effectuall to mundifie those kind of Ulcers. ℞. *Hordei integri, M.* ij. *glycyrrhizæ raſ. & contuſ.* ʒß. *rad. acetoſæ & petroſel. an.* ʒvj. *fiat decoctio ad* ℔j. *in colatura diſſolve mellis diſpum.* ʒij. Let him take every morning the quantity of four ounces. *Gordonius* exceedingly commends the following Trochiſces. ℞. *quatuor ſem. frig. maj. mundatorum, ſem. papaveris albi, ſem. malvæ, portul. cydon. baccarum myrti, tragacanth. gum. arab. nucum pinearum mund. piſtach. glycyrrhizæ mund. muscaginis ſem. pſilii, amygd. dulc. hordei mund. an.* ʒij. *bol. armeni, ſang. drac. ſpodii, roſarum, myrrhæ, an.* ʒß. *excipiantur hydromelite, & fingantur trochiſci ſinguli ponderis* ʒij. Let him take one thereof in the morning diſſolved in Barley water or Goats milk. *Galen* bids to mixe honey and diuretick things with medicines made for the Ulcers of the reins and bladder, for that they gently move urine, and are as vehicles to carry the medicines to the part affected. Ulcers of the bladder are either in the bottome thereof, or at the neck and urinary paſſage. If they be in the bottome, the pain is almoſt continuall; if in the neck, the pain then pricks and is moſt terrible when they make water and preſently after. The ulcer which is in the bottome ſends forth certain ſcaly or skinny excrements together with the urine; but that which is in the neck, cauſes almoſt a continuall *Tenigo*. Thoſe which are in the bottome are for the moſt part incurable, both by reaſon of the bloodleſs and nervous nature of the part, as alſo for that the ulcer is continually chaſed and troubled by the acrimony of the urine, ſo that it can hardly be cicatrized. For even after making of water ſome reliques of the urine alwayes remain in the bottome of the bladder, which could not therefore paſs forth together with the reſt of the urine, for that for the paſſing forth of the urine, the bladder being diſtended before, fals and is complicated in its ſelfe. Ulcers of the bladder are healed with the ſame medicins as thoſe of the reins are; but theſe not only taken by the mouth but alſo injected by the urinary paſſage. Theſe injections may be made of *Gordonius* his Trochiſces formerly preſcribed, being diſſolved in ſome convenient liquor; but becauſe ulcers of the bladder cauſe greater and more ſharpe pain than thoſe of the kidnies, therefore the Chirurgeon muſt be more diligent in uſing Anodynes. For this purpoſe, I have often by experience found, that the oil of henbane made by expreſſion gives certain help. He ſhall do the ſame with Cataplaſms and liniments applyed to the parts about the *Pecten* and all the lower belly and *perinæum*, as alſo by caſting in of Clyſters. If that they ſtink, it will not be amiſſe to make injection of a little *Ægyptiacum* diſſolved in wine, plantain, or roſe water. For I have often uſed this remedy in ſuch a caſe with very proſperous ſucceſs.

Things to cleanſe theſe ulcers.

Trochiſces for the ulcers of the kidnies and bladder. 4. *Method.*

Signs to know what part of the bladder is ulcerated.

Why ulcers in the bottome of the bladder are uncurable.

*Ægyptiacum* for the ulcers of the bladder.

## CHAP. XIX. *Of the Ulcers of the Womb.*

Ulcers are bred in the womb either by the conflux of an acrid, or biting humour, fretting the coats thereof, or by a tumour againſt nature degenerating into an abſceſſe, or by a difficult and hard labour; they are known by pain at the *perinæum*, and the efflux of *Pus* and *Sanies* by the privity. All of them in the opinion of *Avicen* are either putrid, when as the *Sanies* breaking forth is of a ſtinking ſmell, and in colour reſembles the water wherein fleſh hath been waſhed; or elſe ſordid, when as they flow with many virulent and crude humours; or elſe are eating or ſpreading ulcers, when as they caſt forth black *Sanies*, and have pulſation joined with much paine. Beſides they differ amongſt themſelves in ſite, for either they poſſeſs the neck and are known by the ſight, by putting in a *ſpeculum*, or elſe are in the bottome, and are manifeſted by the condition of the more liquid and ſerous excrements, and the ſite of the pain. They are cured with the ſame remedies wherewith the ulcers of the mouth, to wit, with *aqua fortis*, the oil of Vitriol and Antimony, and other things made ſomewhat more milde, and corrected with that moderation, that the ulcerated parts of the Womb may be ſafely touched with them; it is requiſite that the remedies which are applyed to the ulcers of the womb, do in a moment that which is expected of them, for they cannot long adhere or ſtick in the womb, as neither to the mouth. *Galen* ſaith that very drying medicins are exceeding fit for the ulcers of the womb, that ſo the putrefaction may be hindred or reſtrained, whereto this part as being hot and moiſt is very ſubject; beſides that the whole body unto this part as unto a ſink ſends downe its excrements. If an ulcer take hold of the bottome of the womb, it ſhall be cleanſed and the part alſo ſtrengthened by making this following injection. ℞. *hordei integri p.* ij. *guajaci.* ʒj. *rad. Ireos.* ʒß. *abſinth. plant. centaur. utriuſque, an. M.* j. *fiat decoct. in aqua fabrorum ad* ℔ij. *in quibus diſſolve mellis roſati, & ſyrupi de abſinthio, an.* ʒiij. *fiat injectio.* For amending the ſtinking ſmell I have often had certaine experience of this enſuing remedy. ℞. *vini rub.* ℔j. *unguent. ægyptiaci* ʒij. *bulliant parum.* Thus the putrefaction may be corrected, and the painfull malicioufneſs of the humour abated. Ulcers when they are cleanſed muſt preſently be cicatriced; that may be done with Alum water, the water of Plantain wherein a little Vitriol or Alum have been diſſolved. Laſtly, if remedies nothing availing, the ulcer turn into a *cancer*, it muſt be dreſſed with anodynes and remedies proper for a *cancer*, which you may finde ſet down in the proper treatiſe of *Cancers*. The cure of ulcers of the fundament was to be joined to the cure of theſe of the womb; but I have thought good to referre it to the treatiſe of *Fiſtula's*, as I do the cure of theſe of the urinary paſſage to the treatiſe of the *Lues venerea*.

The cauſes.

*Lib. 3. ſect. 12. tract. 2. cap. 5.*

Signes.

The cure

Why ſtrongly drying things are good for ulcers of the womb.

An injection for an ulcer in the bottome of the wombe.

An injection hindring putrefaction.

## CHAP. XX. *Of the* Varices *and their cure by cutting.*

A *Varix* is the dilatation of a vein, ſome whiles of one and that a ſimple branch, other whiles of many. Every *varix* is either ſtreight or crooked, and as it were infolded into certaine windings within its ſelfe. Many parts are ſubject to *Varices*, as the temples, the region of the belly under the navill, the teſticles, womb, fundament, but principally the thighs and legs. The matter of them is uſually melancholy bloud, for *Varices* often grow in men of a melancholy temper, and which uſually feed on groſs meats, or ſuch as breed groſs and melancholy humours. Alſo women with child are commonly troubled with them, by reaſon of the heaping together of their ſuppreſſed menſtruall evacuation.

What a *Varix* is, and what be the differences thereof.

The matter.

The causes. Signes. The cure. The cutting of *Varices*. cuation. The precedent causes are a vehement concussion of the body, leaping, running, a painful journey on foot, a fall, the carrying of a heavy burden, torture or racking. This kind of disease gives manifest signs therof by the lageness, thickness, swelling and colour of the veines. It is best not to meddle with such as are inveterate; for of such being cured there is to be feared a reflux of the melancholly bloud to the noble parts, whence there may be imminent danger of malign ulcers, a cancer, madness or suffocation. When as many *Varices* and diversly implicit are in the legs, they often swell with congealed and dryed bloud, and cause pain which is increased by going and compression. Such like *varices* are to be opened by dividing the veine with a Lancet, and then the bloud must be pressed out, and evacuated by pressing it upwards and downwards; which I have oft-times done, and that with happy success to the Patients, whom I have made to rest for some few dayes, and have applyed convenient medicins. A *varix* is often cut in the inside of the leg a little below the knee, in which place commonly the originall thereof is seen. He which goes about to intercept a *varix* downwards from the first originall and as it were fountain thereof, makes the cure far more difficult. For hence it is divided as it were into many rivelets, all which the Chirurgeon is forced to follow.

For what intention a *Varix* must be cut. *Paulus cap.* 82. *lib.*6. The manner how to cut it. A *varix* is therefore cut or taken away so to intetcept the passage of the blood and humours mixed together therewith, flowing to an ulcer seated beneath; or else lest that by the too great quantity of blood, the vessel should be broken, and death be occasioned by a hæmorrhagie proceeding from thence. Now this is the manner of cutting it. Let the Patient lye upon his back on a bench or table, then make a ligature upon the leg in two places the distance of some four fingers each from other, wherein the excision may be made, for so the vein will swell up and come more in sight, and besides you may also mark it with inke; then taking the skin up between your fingers cut it long wayes according as you have marked it, then free the bared vein from the adjacent bodies, and put thereunder a blunt pointed needle (lest you prick the vein) thred with a long double thred, and so bind it fast; and then let it be opened with a Lancet in the middle under the ligature just as you open a vein, and draw as much therehence as shall be fit. Then straight make a ligature in the lower part of the forementioned vein, and then cut away as much of the said vein as is convenient between the ligatures, and so let the ends thereof withdraw themselves into the flesh above and below; let these ligatures alone untill such time as they fall away of themselves. The operation being performed, let an astringent medicine be applyed to the wound and the neighbouring parts; neither must you stir the wound any more for the space of three dayes. Then do all other things as are fit to be done to other such affects.

## CHAP. XXI. *Of Fistula's.*

What a Fistula is. A Fistula is a sinuous, white, narrow, callous, and not seldome unperceivable ulcer. It took its denomination from the similitude of a reeden (Fistula) that is, a pipe, like whose hollowness it is. A Fistula is bred in sundry parts of the body, and commonly followes upon abscesses or ulcers not well cured.

What a Callous is. The differences of Fistula's. A *Callous* is a certain fleshy substance, white, solid, or dense and hard, dry and without pain, generated by heaping up of dryed excrementitious phlegme, or else adust melancholy encompassing the circuit of the ulcer, and substituting it selfe into the place of laudable flesh. The *Sinus* or cavity of a Fistula is sometimes dry, and other while drops with continuall moisture: sometimes the dropping of the matter sodainly ceases, and the orifice thereof is shut up, that so it may deceive both the Chirurgeon and the Patient with a false shew of an absolute cure; for within a while after it will open again and run as formerly it did. Some Fistula's are bred by the corruption of a bone, others of a nerve, others of membranes, and others of other parts of the body. Some run straight in, others and that the greater part, have turnings and windings; some have one, others have more orifices and windings; some are at the joints, others penetrate into some capacity of the body, as into the chest, belly, guts, womb, bladder; some are easily, others difficultly cured, and some wholly uncurable. There are divers signs of Fistula's according to the variety of the parts they possess; for if that which you touch with the end of your probe make resistance, and resound, then you may know that it is come to the bone; and then if the end of the probe slip up and down as on a smooth and polite superficies, it is a sign that the bone is yet sound; but if it stop and stay in any place as in a rough way, then know that the bone is eaten, rough and perished; sometimes the bone lies bare, and then you need not use the probe. Besides also it is a sign that the bone is affected, if there be a purulent efflux of an unctuous or oily matter, not much unlike that marrow wherewith the bone is nourished. For every excrement shewes the condition of the nourishment of the part whence it is sent; in a Fistula which penetrates to a nerve, the Patient is troubled with a pricking paine, especially when you come to search with a probe, especially if the matter which flowes down be more acrid. Oft-times if it be cold, the member is stupified the motion being weakened; besides also the matter which flowes from thence is more subtle, and somewhat like unto that which flowes from the bones, yet not oily nor fat, but sanious and viscous, resembling the condition of the alimentary humour of the nerves. The same usually appears and happens in Fistula's which penetrate to the Tendons and those membranes which involve the muscles. If the Fistula be within the flesh, the matter flowing thence is more thick and plentiful, smooth, white, and equall. If it descend into the veins or arteries, the same happen as in those of the nerves; but that there is no such great pain in searching with your probe, nor no offence or impediment in the use of any member: yet if the matter of the fistulous ulcer be so acrid, as that it corrode the vessels, blood will flow forth; and that more thick if it be from a vein, but more subtle and with some murmuring if from an artery. Old Fistula's and such as have run for many years, if suddainly shut up, cause death, especially in an ancient and weak body.

The signes. The signe that the bone is bare from the condition of the matter which is cast forth. *Aetius tetr.* 4 *sect.*2. *cap.* 55. Old Fistula's if closed prove mortall.

CHAP.

## CHAP. XXII. *Of the cure of Fistula's.*

FOr the cure; in the first place it will be expedient to search the Fistula; and that either with a wax size, a probe of lead, gold or silver, to find out the depth and windings or corners thereof. But if the Fistula be hollowed with two or more orifices, and those cuniculous, so that you cannot possibly and certainly search or find them all out with your probe; then must you cast an injection into some one of these holes, and so observe the places where it comes forth, for so you may learn how many, and how deep or superficiary cavities there be; then by making incisions you must lay open and cut away the callous parts. You must make incisions with an incision knife or razour, or else apply actuall or potentiall cauteries; for nature cannot unless the callous substance be first taken away, restore or generate flesh or agglutinate the distant bodies. For hard things cannot grow together, unless by the interposition of glue, such as is laudable blood; but a callous body on all sides possessing the surface of the ulcerated flesh, hinders the flowing of the blood out of the capillary veins for the restoring of the lost substance and uniting of the disjoined parts. If you at any time make caustick injections into the Fistula, you must presently stop the orifice thereof, that so they may have time to worke the effect, for which they are intended. Which thing we may conjecture by the tumor of the part, the digesture of the flowing matter, and its lesser quantity. Then you must hasten the falling away of the Eschar, and then the ulcer must be dressed like other ulcers. But oft-times the *Callous* which possesses the sinuous cavity of a Fistula, overcome by the power of acrid and escarcotick medicins comes whole forth, and falls out like a pipe, and so leaves a pure ulcer underneath it. Which I observed in a certain Gentleman, when I had washed with strong *Ægyptiacum* divers times a Fistulous ulcer in his thigh shot through with a bullet; then presently by putting in my Balsam formerly described, he grew well in a short time. Fistula's which are neer great vessells, Nerves or principall intrailes, must not be medled with unless with great caution. When a Fistula proceeds by the fault of a corrupt bone, it is to be considered whether that fault in your bone be superficiary, or deeper in, or whether it is wholly rotten and perished. For if the default be superficiary it may easily be taken away with a desquammatory Trepan; but if it penetrate even to the marrow, it must be taken forth with cutting mullets, first having made way with a *Terebellum*. But if the bone be quite rotten and perished, it must be wholly taken away, which may be fitly done, in the joints of the fingers, the *radius* of the Cubit and Leg; but no such thing may be attempted in the socket of the Huckle bone, the head of the Thigh bone, or any of the Rack bones when they are mortified, neither in those Fistula's, which are of their own nature uncurable; but you shall think you have discharged your duty and done sufficiently for the Patient, if you leave it with a prognostick. Of this nature are Fistula's which penetrate even to the bowells, which come into the parts orespread with large vessells or Nerves, which happen to effeminate and tender persons, who had rathrr dye by much, then to suffer the pain and torment of the operation. Like caution must be used, when by the cutting of a Fistula there is fear of greater danger, as of convulsion if the disease be in a nervous part. In these and the like cases the Chirurgeon shall not set upon the perfect cure of the disease, but shall think it better to prevent by all means possible that the disease by fresh supplies become no worse, which may be done if he prevent the falling down of any new defluxion into the part; if by an artificiall diet he have a care that excrementitious humors be not too plentifully generated in the body; or so order it, that being generated they may be evacuated at certain times, or else diverted from the more noble to the base parts. But in the mean space it shall be requisite to wast the faulty flesh, which growes up more then is fitting in the ulcer, and to clense the *sordes* or filth, with medicins, which may do it without biting or acrimony and putrefaction.

How to find out the windings and cavities of Fistula's.

Caustick injections.

*Celsus lib. 5.*

Remedies for a Fistula proceeding from a corrupt bone.

The cure of what Fistula's may be attempred, and which may not.

A palliative cure of a Fistula.

## CHAP. XXIII. *Of the Fistula's in the Fundament.*

FIstula's in the Fundament are bred of the same causes as other kinds of Fistula's are; to wit, of a wound or abscesse not well cured, or of a hæmorrhoid which is suppurated. Such as are occult, may be known by dropping down of the *sanious* and purulent humor by the Fundament and the pain of the adjacent parts. But such as are manifest by the help of your probe you may find whither they goe and how far they reach. For this purpose the Chirurgeon shall put his finger into the Fundament of the Patient, and then put a Leaden probe into the orifice of the Fistula, which if it come to the finger without interposition of any *medium*, it is a sign it penetrates into the capacity of the Gut. Besides also then there flowes not only by the Fundament but also by the orifice which the malign humor hath opened by its acrimony, much matter, somewhiles sanious, and oft-times also breeding Worms. Fistula's may be judged cuniculous, and running into many turnings and windings, if the probe do not enter far in, and yet notwithstanding more matter flowes therehence then reason requires should proceed from so small an ulcer. You may in the orifices of all Fistula's, perceive a certain callous wart, which the common Chirurgeons tearm a Hens arse. Many symptomes accompany Fistula's which are in the Fundament, as a *Tenesmus*, strangury and falling down of the Fundament. If the Fistula must be cured by manuall operation, let the Patient lye so upon his back, that lifting up his legs, his thighs may presse his belly, then let the Chirurgeon, having his nail pared, put his finger besmeared with some ointment into the Patients Fundament; then let him thrust in at the orifice of the Fistula a thick Leaden needle drawing after it a thread consisting of thread and horse hairs woven together, and then with his finger taking hold thereof and somewhat crooking it, draw it forth at the Fundament, together with the end of the Thread. Then let him knit the two ends of the thread with a draw or loose knot, that so he may straiten them at his pleasure.

The causes.

Signs.

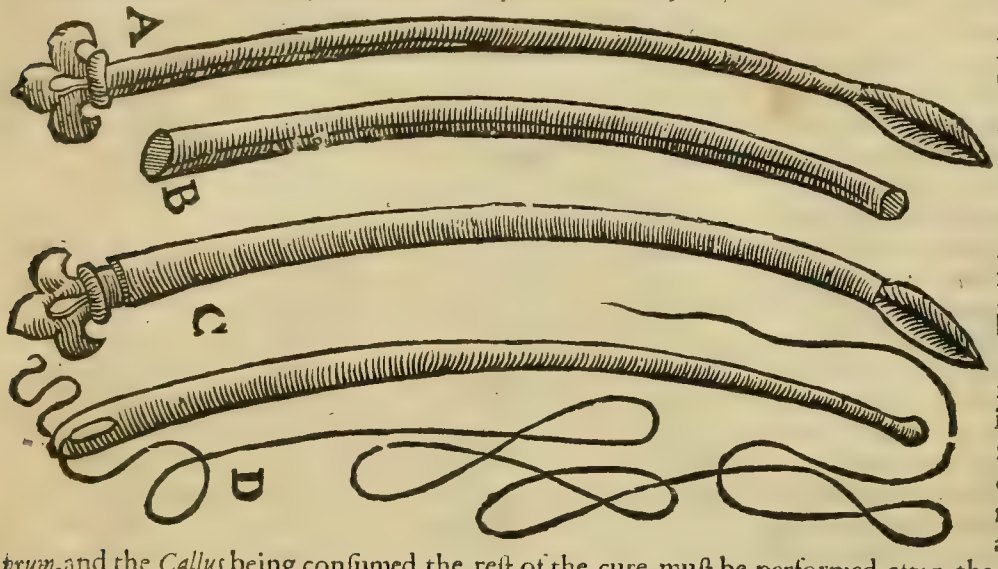
Symptomes.

The art of binding and cutting a Fistula of the Fundament.

But

But before you bind them you ſhall draw the thread ſomewhat roughly towards you as though you meant to ſaw the fleſh therein contained, that you may by this means cut the Fiſtula without any fear of an Hæmorrhage, or flux of blood. It ſometimes happens that ſuch Fiſtula's penetrate not into the Gut; ſo that the finger by interpoſition of ſome callous body cannot meet with the needle or probe. Then it is convenient to put in a hollow Iron or ſilver probe ſo through the cavity thereof to thruſt a ſharp pointed needle, & that by pricking and cutting may deſtroy the *Callus*; which thing you cannot perform with the formerly deſcribed leaden probe, which hath a blunt point, unleſs with great pain.

*The deſcription of a hollow ſilver Probe to be uſed with a needle, as alſo a Leaden Probe.*




A. *Shewes the Needle.*
B. *The hollow probe.*
C. *The needle with the probe.*
D. *The Leaden needle drawing a thread after it.*

The *Callus* being waſted, the Fiſtula ſhall be bound as we formerly mentioned. That which is ſuperficiary needs no binding, onely it muſt be cut with a crooked *ſcalprum*, and the *Callus* being conſumed, the reſt of the cure muſt be performed after the manner of other ulcers. But you muſt note, that if any parcell of the Callous body remain untoucht by the medicin or Inſtrument, the Fiſtula reviving again will cauſe a relapſe.

## CHAP. XXIIII. *Of Hæmorrhoides.*

What they are.

HÆmorrhoides, as the word is uſually taken, are tumors at the extreamities of the veins encompaſſing the Fundament, cauſed by the defluxion of an humor commonly melancholick, and repreſenting a certain kind of *Varices*. Some of theſe run at an hole being opened, which ſometimes in ſpace of time contracts a *Callus*; others only ſwell, and caſt forth no moiſture; ſome are manifeſt; other lye only hid within. Thoſe which run, commonly caſt forth blood mixed with yellowiſh ſerous moiſture, which ſtimulates the blood to break forth, and by its acrimony opens the mouths of the veins. But ſuch as do not run, are either like bliſters, ſuch as happen in burns, and by practitioners are uſually called *veſicales*, and are cauſed by the defluxion of a phlegmatick and ſerous humor; or elſe repreſent a Grape, whence they are called *Vvales*, generated by the afflux of blood laudable in quality, but overabundant in quantity; or elſe they expreſſe the manner of a diſeaſe, whence they are termed *morales*, proceeding from the ſuppreſſion of melancholick blood; or elſe they repreſent warts, whence they are ſtiled *Verrucales*, enjoying the ſame materiall cauſe of the generation as the *morales* do. This affect is cauſe of many accidents in men; for the perpetuall efflux of blood extinguiſheth the vivid and lively colour of the face, calls on a dropſie, overthrows the ſtrength of the whole body. The flux of Hæmorrhoides is commonly every moneth, ſometimes only foure times in a yeare. Great pain, inflammation, an Abſceſſe which may at length end in a Fiſtula, unleſſe it be reſiſted by convenient remedies, do oft-times forerun the evacuation of the Hæmorrhoides. But if the Hæmorrhoides flow in a moderate quantity, if the Patients brook it well, they ought not to be ſtayed, for that they free the Patients from the fear of iminent evills, as melancholy, leproſie, ſtrangury and the like. Beſides, if they be ſtopped without a cauſe, they by their reflux into the Lungs cauſe their inflammation, or elſe break the veſſells thereof, and by flowing to the Liver cauſe a dropſie by the ſuffocation of the native heat; they cauſe a dropſie, and univerſall leanneſſe on the contrary, if they flow immoderately, by refrigerating the Liver by loſſe of too much blood; wherefore when as they flow too immoderately, they muſt be ſtayed with a pledget of hares down dipped in the enſuing medicin. ℞ *pul. aloes, thuris, balauſt. ſang. draconis, an.* ℥ß. *incorporentur ſimul cum ovi albumine, fiat medicamentum ad uſum.* When they are ſtretched out and ſwoln without bleeding, it is convenient to beat an Onion roaſted in the embers with an Oxes gall; and apply this medicin to the ſwoln places, and renew it every five houres. This kind of remedy is very prevalent for internall Hæmorrhoides; but ſuch as are manifeſt may be opened with horſleaches, or a Lancet. The juice or maſſe of the hearb called commonly Dead-nettle or Arkangell, applyed to the ſwoln Hæmorrhoides opens them, and makes the congealed blood flow therehence. The *Fungus* and *Thymus* being diſeaſes about the fundament are cured by the ſame remedy. If acrimony, heat and pain do too cruelly afflict the Patient, you muſt make him enter into a bath, and preſently after apply to the ulcers (if any ſuch be) this following remedy. ℞ *Olei roſ.* ℥iiij. *ceruſæ* ℥i. *Litharg.* ℥ß. *ceræ novæ,* ℥vj. *opii* ℈j. *fiat unguent. ſecundum artem.* Or elſe, ℞ *thuris, myrrhæ, croci, an.* ℥j. *opii* ℈j. *fiat unguentum cum oleo roſarum & mucagine ſem. pſillii, addendo vitellum unius ovi.* You may eaſily proſecute the reſidue of the cure according to the generall rules of Art.

Symptomes.

*Sent. 37 ſect. 6. epid.*

A remedy for the immoderate flowing of the Hæmorrhoides.

For ſuppreſt Hæmorrhoides

*The end of the Thirteenth Booke.*

# OF BANDAGES, OR, LIGATVRES.

## THE FOURTEENTH. BOOK.

### CHAP. I. *Of the differences of Bandages.*

BAndages, wherewith we use to bind, do much differ amongst themselves. But their differences (in *Galens* opinion) are chiefly drawn from six things; to wit, their matter, figure, length, breadth, making, and parts whereof they consist. Now the matter of Bandages is threefold; Membranous or of skins, which is accommodated peculiarly to the fractured grisles of the Nose; of Woollen, proper to inflamed parts, as those which have need of no astriction; of Linnen, as when any thing is to be fast bound: and of Linnen cloaths, some are made of flax, othersome of hemp, as *Hippocrates* observes. But Bandages do thus differ amongst themselves in structure, for that some thereof consist of that matter which is sufficiently close and strong of it self, such are the membranous; others are woven, as the linnen ones. But that linnen is to be made choice of for this use, and judged the best, not which is new and never formerly used, but that which hath already been worn and served for other uses; that so the Bandages made thereof may be the more soft and pliable: yet must they be of such strength, that they may not break with stretching, & that they may straitly contain & repell the humor ready to flow down, and so hinder it from entring the part. These, besides, must not be hemmed nor stitched, must have no lace nor seam; for hems and seams by their hardness presse into, and hurt the flesh that lyes under them. Lace, whether in the midst or edges of the rowler, makes the Ligature unequall. For the Member where it is touched with the lace, as that which will not yeeld, is pressed more hard; but with the cloth in the middle more gently, as that which is more lax. Furthermore, these Ligatures must be of clean cloth, that if occasion be, they may be moistened or steeped in liquor appropriate to the disease, and that they may not corrupt, or make worse that liquor by their moistening therein. Now the Bandages which are made of Linnen clothes must be cut long-wayes, and not athwart, for so they shall keep more firm and strong that which they bind, and besides, they will be alwaies alike, and not broader in one place then in another. But they thus differ in figure, for that some of them are rowled up, to which nothing must be sowed, for that they ought to be of a due length to bind up the member: others are cut or divided, which truely consist of one piece, but that divided in the end (such are usually taken to bind up the breasts) or else in the midst; others are sowed together, which consist of many branches sowed together, and ending in divers heads, and representing divers figures, such are the Bandages appropriated to the head. But they thus differ in length, for that some of them are shorter, others longer: so in like sort for breadth; for some are broader, others narrower. Yet we cannot certainly define nor set down neither the length, nor breadth of Rowlers, for that they must be various, according to the different length and thickness of the members or parts. Generally they ought both in length and breadth to fit the parts, whereunto they are used. For these parts require a binding different each from other, the head, the neck, shoulders, arms, breasts, groins, testicles, tundament, hips, thighs, legs, feet and toes. For the parts of Bandages, we tearm one part their body, another their heads. By the body we mean their due length and breadth; but their ends, whether they run long-wayes or a-crosse, we according to *Galen*, term them their heads.

*Lib. de fasciis.*

*Sect. 3. de Chir. offic.*

What cloth best for rowlers.

*Com. ad sect. 22 sect. 2. de offic. chir.*

### CHAP. II. *Sheweth the indications and generall precepts of fitting of Bandages and Ligatures.*

THere are, in *Hippocrates* opinion, two indications of fitting Bandages or Ligatures; the one whereof is taken from the part affected; the other from the affect it self. From the part affected: so the leg, if you at any time bind it up, must be bound long-wayes, for if you bind it overthwart, the binding will loosen as soon as the Patient begins to go, and put forth his leg, for then the muscles take upon them another figure. On the contrary the Arm or Elbow must be bound up, bending in and turned to the breast, for otherwise at the first bending, if it be bound when it is stretched forth, the Ligature will be slacked, for that (as we formerly said) the figure of the muscles is perverted. Now for this indication, let each one perswade himself thus much, that the part must be bound up in that figure, wherein we would have it remain.

*1. & 2. sect. lib. de fract.*

Now for that indication which is drawn from the disease, if there be a hollow ulcer, sinuous and cuniculous, casting forth great store of *Sanies*, then must you begin the ligature and binding from the bottom of the *sinus*, and end at the orifice of the ulcer; and this precept must you alwayes observe, whether the *sinus* be sealed in the top, bottom, middle, or sides of the ulcer. For thus the filth therein contained shall be emptied and cast forth, and the lips of the ulcer too far separated, shall be joined together: otherwise the contained filth will eat into all that lyes neer it, increase the ulcer, and make it

We must alwaies begin our ligatures at the bottom of a *sinus*.

uncurable by rotting the bones which lye under it with this acrid *ſanies* or filth. But ſome Ligatures are remedies of themſelves,as thoſe which perform their duties of themſelves,and whereto the cure is committed,as are theſe which reſtore their native unitie, thoſe parts which are disjoined: others are not uſed for their own ſakes,but only to ſerve to hold faſt ſuch medicins as have a curative facultie. This kind of Ligature is either yet a doing,and is termed by *Hippocrates Deligatio operans*; or elſe done and finiſhed,and is called,*Deligatio operata*:for the firſt,that the Ligature may be well made, it is fit that it be cloſe rowled together,and beſides,that the Surgeon hold it ſtiffe and ſtrait in his hand, and not carelesly,for ſo he ſhall bind up the member the better. Alſo he muſt in the binding obſerve, that the ends of the Rowler,and conſequently their faſtning may not fall to be on the affected or grieved part, for it is better that they come above or below,or elſe on the ſide: beſides alſo, he muſt have a ſpeciall care that there be no knot tyed upon the ſame place,or upon the region of the back, buttocks, ſides, joints,or back part of the head,or to conclude in any other part upon which the Patient uſes to lean, reſt or lye. Alſo on that part where we intend to ſow or faſten the Rowlers,you muſt double in their ends,that ſo the faſtning or ſuture may be the ſtronger,otherwiſe how cloſe ſoever they ſhall be wrapped or rowled about the member, yet will they not remain firm,eſpecially if they be of a great breadth. For the ſecond kind of Ligature,to wit,that which is already done and finiſhed;the Surgeon, the performer thereof,muſt conſider to what end it was done,and whether he hath performed it well and fitly,as alſo neatly and elegantly,to the ſatisfaction both of himſelf and the beholders. For it is the part of a skilfull Workman every where handſomely and rightly to perform that which may ſo be done.

*Hip. cen. 4. Sect 2. offic. Initio 2 ſect. off.*

Ligatures muſt not be only lightly, but alſo neatly performed.

In fractures and luxations and all diſlocations of bones,as alſo in wounds and contuſions,you muſt begin your bandage with two or three windings or wraps about upon the place,and that(if you can) more ſtraitly than in other places,that ſo the ſet bones may be the better kept in their places,and that the humors,if any be already fallen thither,may by this ſtrait compreſſion be preſſed forth, as alſo to hinder and prevent the entrance in of any other which may be ready to fall down. But in fractures (as thoſe which never happen without contuſion)the blood flowes,and is preſſed forth of its proper veſſels,as thoſe which are violently battered and torn, which cauſes ſugillation in the neighbouring fleſh,which firſt looks red, but afterwards black and blue by reaſon of the corruption of the blood poured forth under the skin. Wherefore after theſe firſt windings, which I formerly mentioned, you muſt continue your rowling a great way from the broken or luxated part; he which does otherwiſe, will more and more draw the blood and humors into the affected part,and cauſe Impoſtumes, and other malign accidents.Now the blood which flowes,goes but one way downwards, but that which is preſſed is carryed as it were in two paths,to wit, from above do wnwards, and from below upwards. Yet you muſt have a care that you rather drive it back into the body and bowels, then towards the extremities thereof,as being parts which are uncapable of ſo much matter,and not furniſhed with ſufficient ſtrength to ſuffer that burden, which threatens to fall upon it, without danger and the increaſe of prenaturall accidents. But when this maſſe and burden of humors is thruſt back into the body,it is then ruled and kept from doing harm by the ſtrength and benefit of the faculties remaining in the bowels and the native heat.

*Gal.com.ad ſent.25.ſect. 1.lib.de fract.*

## CHAP. III. *Of the three kinds of Bandages neceſſary in fractures.*

*Sent.24. ſect.2. offic.*

TWo ſorts of Ligatures are principally neceſſary for the Surgeon, according to *Hippocrates*, by which the bones aſwell broken as diſlocated may be held firm when they are reſtored to their naturall place.

*Hypodeſmides.*

Of theſe ſome are called *Hypodeſmides*, that is, Under-binders: others, *Epideſmi*, that is, Over-binders. There are ſometimes but two under-binders uſed, but more commonly three. The firſt muſt firſt of all be caſt over the fracture,and wrapped there ſome three or foure times about,then the Surgeon muſt mark and obſerve the figure of the fracture;for as that ſhall be, ſo muſt he vary the manner of his binding.For the Ligature muſt be drawn ſtrait upon the ſide oppoſite to that whereto the luxation or fracture moſt inclines, that ſo the bone which ſtands forth may be forced into its ſeat,and ſo forced may be the more firmly there contained. Therefore if the right ſide be the more prominent or ſtanding forth, thence muſt you begin your ligation,and ſo draw your ligature to the left ſide. On the contrary,if the left ſide be more prominent,beginning there, you ſhall goe towards the oppoſite ſide in binding and rowling it. Here therefore would I require a Surgeon to be *Ambidexter*,(.i.) having both his hands at command, that ſo he may the more exquiſitely perform ſuch variety of ligations.But let him in rowling,bend or move this firſt ligature upwards, that is, towards the body,for the former reaſons. But neither is this manner of ligation peculiar to fractures, but common to them with luxations:for,into what part ſoever the luxated bone flew, then when it is reſtored,that ſide muſt be bound the more looſly and gently whence it departed, and that on the contrary more hard unto which it went. Therefore the ligature muſt be drawn from the ſide whereunto the bone went;ſo that on this ſide it be more looſe and ſoft,and not ſtraitly preſſed with boulſters or rowlers,that ſo it may be more inclined to the ſide oppoſite to the luxation. If the ligation be otherwiſe performed,it ſucceeds not well,for the part is relaxed,and moved out of its natural ſeat: wherefore there will be no ſmall danger,leſt the bone be forced out again,and removed from its place, whereinto it was reſtored by art and the hand. Which thing *Hippocrates* ſo much feared, that on the contrary he willed that the ſet bone ſhould be drawn ſomewhat more unto the part contrary to that whereunto it was driven by force,than the naturall and proper ſite thereof ſhould require.But to return to our former diſcourſe of the three Ligatures:The firſt underbinder being put on, we then take the ſecond,with which we in like ſort begin at the fracture,but having wrapped it once or twice about

bout there, for that, as we formerly ſaid, we muſt not force back, and preſſe ſo much blood towards the extremities, as we muſt do towards the body and bowels. Wherefore this Ligature ſhall be drawn from above downwards, gently ſtraining it to preſſe forth the blood contained in the wounded part: When by rowling you ſhall come to the end of the part, then you ſhall carry back again that which remains thereof, to wit, upwards; But otherwiſe you may take the third under-binder, wherewith you may begin to rowle, whereas you left with the ſecond, & you may carry it thus, rowling it from below upwards. Theſe under-bindings thus finiſhed, apply your boulſters, after them your over or upper-bindings, which are oft-times two, but ſometimes three. The firſt hath two heads, and is wrapped both from the right hand and the left, for the preſervation of the firſt under-binder and the boulſters, and reſtoring the muſcles to their native figure. The two other which remain, conſiſt of one head, and the one of them muſt be rowled from below upwards, the other from above downwards, after ſuch a manner, that they may be directly contrary to the under-binders; as if they were rowled from the right hand, then theſe muſt be from the left. Now this is the manner of *Hippocrates* his Ligation, which, for that it is now grown out of uſe, we muſt here ſet down that which is in common uſe. They do not at this time uſe any over-binders, but that which we termed the third under-binder ſerves our Surgeons in ſtead of the three forementioned over-binders. Wherefore they carry this third under-binder, wrapped from below upwards (as we formerly ſaid) contrary to the firſt and ſecond under-binder; as if theſe begun on the right ſide, this ſhall be rowled from the left, and ſhall end whereas the firſt under-binder ended. And you muſt not only draw it indifferently hard, but alſo make the ſpires and windings more rare. This third rowler is of this uſe in this manner of Ligation, that is, it reſtores the muſcles to their native figure, from whence they were ſomewhat altered by the drawing and rowling of the two former Ligatures. But you muſt always have regard, that you obſerve that meaſure in wrapping your Ligatures, which reaſon, with the ſenſe of the Patient, and eaſe in ſuffering, preſcribes; having regard that the tumor become not inflamed. Alſo the habit of the body ought to preſcribe a meaſure in Ligation: for tender bodies cannot away with ſo hard binding as hard. Verily, in fractures and luxations, the humors by too ſtrait binding are preſſed into the extreme parts of the body; whence grievous and oft-times enormous Oedema's proceed; for healing whereof the Ligature muſt be looſed, and then the tumified parts preſſed by a new rowling, which muſt be performed from below upwards, and ſo, by forcing the matter of the tumor thither, it may be helped; for there is no other hope or way to drive the humor back again. He which doth this, forſakes the proper cure of the diſeaſe, ſo to reſiſt the ſymptome, which the Surgeon ſhall never refuſe to do, as often as any neceſſary cauſe ſhall require it. For this cauſe *Hippocrates* bids, that the bandages be looſed every three dayes, and then to foment the part with hot water, that ſo the humors, which (drawne thither by the vehemency of pain) have ſetled in the part, may be diſſolved and diſperſed; and itching and other ſuch like ſymptomes prevented. The fear of all accidents being paſt, let the Ligation be ſooner or later looſed, and more ſlacked then it formerly was accuſtomed; that ſo the blood and laudable matter, whereof a *Callus* may enſue, may flow more freely to the affected part.

When the third under-binder is neceſſary. *Epideſmi.*

The manner of binding now in uſe.

What mean to be obſerved in wrapping the Ligatures.

VVhy *Hippoc.* bids to looſe the Ligatures every third day.

## CHAP. IIII. *Of the binding up of Fractures aſſociated with a wound.*

IT ſometimes happens, that a Fracture is aſſociated by a wound, and yet for all this it is fit to bind the part with a Ligature, otherwiſe there will be no ſmall danger of ſwelling, inflammation, and other ill accidents, by reaſon of the too plentifull afflux of humors from the neigbouring parts. But it is not fit to endeavour to uſe that kind of binding which is performed with many circumvolutions or wrappings about. For ſeeing the wound muſt be dreſſed every day, the part muſt each day neceſſarily be ſtirred, and the Ligature, conſiſting of ſo many windings, looſed; which thing will cauſe pain, and conſequently hinder the knitting and uniting which is performed by reſt. Therefore this kind of binding may be performed by one only rowling about the wound, and that with a rowler which conſiſts of a twice or thrice doubled cloth, made in manner of a boulſter, and ſewed with as much conveniency as you can, that it may be ſo large as to encompaſſe and cover all the wound, for theſe reaſons; which ſhall be delivered at large in our Treatiſe of Fractures. But if the wound run long-wayes, let the boulſters and ſplints be applyed to the ſides of the wound, that ſo the lips of the wound may be preſſed together, and the contained filth preſſed forth. But if it be made overthwart, we muſt abſtain from boulſters and ſplints: for that, in *Galens* opinion, they would dilate the wound, and the purulent matter would be preſſed out, and caſt back into the wound.

How to bind up a Fracture with a wound.

*Ad ſent. 12. ſect. de fract.*

## CHAP. V. *Certain common precepts of the binding up of Fractures and and luxations.*

IN every Fracture and Luxation, the depreſſed, hollow and extenuated parts, ſuch as are neer unto the joints, ought to be filled up with boulſters, or clothes put about them, ſo to make the part equall, that ſo they may be equally and on every ſide preſſed by the ſplints, and the bones more firmly contained in their ſeats. So when the knee is bound up, you muſt fill the ham or that cavity which is there, that ſo the ligation may be the better and ſpeedilier performed. The ſame muſt be done under the arm-pits, above the heel, in the arm neer the wriſt; and, to conclude, in all other parts which have a conſpicuous inequality by reaſon of ſome manifeſt cavitie. When you have finiſhed your binding, then enquire of the Patient, whether the member ſeem not to be bound too ſtrait. For if he ſay, that he is unable to endure it ſo hard bound, then muſt the binding be ſomewhat ſlackned. For, too ſtrait binding cauſes pain, heat, defluxion, a gangrene, and laſtly, a ſphacell or mortification: but too looſe is unprofitable, for that it doth not contain the parts in that ſtate we deſire. It is a ſign of a juſt ligation that is neither too ſtrait nor too looſe, if the enſuing day the part be ſwoln with an œdematous tumor, cauſed

*Hipp. ſent. 37. & 38. ſect. 1. de fract.*

The ſigns of too ſtrait and looſe binding up.

caused by the blood pressed forth of the broken place; but of too strait ligation, if the part be hard swoln; and of too loose, if it be no whit swoln as that which hath pressed no blood out of the affected part. Now if a hard tumor, caused by too strait binding, trouble the Patient, it must presently be loosed, for fear of more grievons symptomes, and the part must be fomented with warme *Hydrelæum*, and another indifferent, yea verily, more loose ligature must be made in stead thereof, as long as the pain and inflammation shall continue; in which time and for which cause, you shall lay nothing upon the part which is any thing burdensome. When the patient begins to recover, for three or four dayes space, especially if you find him of a more compact habit and a strong man, the ligature must be kept firm and not loosed. If on the third day, and so untill the seventh, the spires or windings be found more loose, and the part affected more slender; then we must judge it to be for the better. For hence you may gather, that there is an expression and digestion of the humors, causing the tumor made by force of the ligation. Verily, broken bones fitly bound up, are better set, and more firmly agglutinated, which is the cause, why in the place of the fracture the ligation must be made the straiter, in other places more loosly. If the fractured bone stand forth in any part, it must there be more straitly pressed with boulsters and splints. To conclud, the seventh day being past, we must bind the part more straitly then before: for thai then inflammation, pain and the like accidents, are not to be feared. But these things which we have hitherto spoken of the three kinds of Ligatures, cannot take place in each fractured part of the body, as in the chaps, collar-bones, head, nose, ribs. For, seeing such parts are not round and long, a Ligature cannot be wrapped about them, as it may on the arms, thighs, and legs, but only be put on their outsides.

VVhy we must make more strait ligation on the broken part.

## CHAP. VI. *The uses for whibh Ligatures serve.*

BY that which we have formerly delivered, you may understand that Ligatures are of use to restore those things which are separated and moved forth of their places, and join together those which gape; as in fractures, wounds, contusions, sinewous ulcers, and otherlike affects against nature, in which the solution of continuity stands in need of the help of Bandages, for the reparation thereof. Besides also, by the help of Bandages these things are kept asunder or separated, which otherwise would grow together against nature; as in Burns, wherein the fingers and the hams would mutually grow together; as also the Arm-pits to the Chest, the Chin to the Breast, unlesse they be hindred by due ligation. Bandages do also conduce to refresh emaciated parts: wherefore if the right leg wast for want of nourishment, the left leg, beginning at the foot, may be conveniently rowled up even to the groin. If the right arm consume, bind the left with a strait Ligature, beginning at the hand, and ending at the arm-pit. For thus a great portion of blood from the bound-up part is sent back into the *vena cava*, from whence it regurgitates into the almost empty vessels of the emaciated part. But I would have the sound part to be so bound, that thereby it become not painfull; for a dolorifick ligation causes a greater attractation of blood and spirits, as also exercise: wherefore I would have it during that time to be at rest, and keep holy-day. Ligatures also conduce to the stopping of bleedings: which you may perceive by this, that when you open a vein with your lancet, the blood is presently stayed, laying on a boulster and making a Ligature. Also Ligatures, are usefull for women presently after their delivery; for their womb being bound about with Ligatures, the blood wherewith their womb was too much moistened, is expelled, the strength of the expulsive faculty being by this means stirred up to the expulsion thereof: and it also hinders the empty womb from being swoln up with wind, which otherwise would presently enter thereinto. This same Ligature is a help to such as are with child, for the more easie carrying of their burden; especially those whose Child lyes so far down-wards, that lying as it were in the den of the hips, it hangs between the thighs, and so hinders the free going of the mother. Therefore the woman with child is not only eased by this binding of her womb with this Ligature, which is commonly termed, the navill Ligature; but also, her child being held up higher in her womb, she hath freer and more liberty to walk. Ligatures are in like sort good for revulsion and derivation: as also for holding of medicins which are laid to a part, as the neck, breast or belly. Lastly, there is a triple use of Ligatures in amputation of members, as arms and legs. The first to draw and hold upwards the skin and muscles lying under it, that the operation being performed, they may, by their falling down again, cover the ends of the cut-off bones; and so by that means help forwards the agglutination and cicatrization; and when it is healed up, cause the lame member to move more freely, and with lesse pain; and also to performe the former actions, this, as it were, cushion or boulster of musculous flesh lying thereunder. The second is, they hinder the bleeding by pressing together the veins and arteries. The third is, they by strait binding intercept the free passage of the animall spirits, and so deprive the part which lyes thereunder of the sense of feeling, by making it, as it were, stupid or num.

The first benefit of Ligatures.

The second.

The third.

The fourth.

The fifth.

The sixth.

The seventh

The eighth, the particular use of ligatures in the amputation of members.

## CHAP. VII *Of Boulsters or Compresses.*

BOulsters have a double use, the first is to fill up the cavities and those parts which are not of an equall thickness to their end. We have examples of cavities in the Arm-pits, Clavicles, Hams and Groins; and of parts which grow small towards their ends, in the arms towards the wrests, in the legs towards the feet, in the thighs towards the knees. Therefore you must fill these parts with boulsters & linnen cloths, that so they may be al of one bigness to their ends. The second use of boulsters, is to defend and preserve the first two or three Rowlers or Under-binders, the which we said before must be applyed immediately to the fractured part. Boulsters, according to this twofold use, differ amongst themselves, for that when they are used in the first mentioned kind, they must be applyed athwart; but when in the latter, long-wayes or down-right.

The first use of Boulsters

The second use of them.

The third use of them.

You may also use Boulsters, lest the too strait binding of the Ligatures cause pain and trouble to the

new

new set bones. A three or four times doubled cloth will serve for the thickness of your Boulsters, but the length and breadth must be more or less, according to the condition of the parts and disease for which they must be applyed.

## CHAP. VIII. *Of the use of Splints, Junks, and Cases.*

HAving delivered the uses of Ligatures and Boulsters, it remains that we say somewhat of the other things, which serve to hold the bones in their places; as Splints, Junks, Cases, and such other like. Splints are made and composed of past-bord, of thin splinters of wood, of leather, such as shoo-soals are made with; of the rinds of trees, or plates of latin, or lead, and such other like, which have a gentle and yeelding stifness; yet would I have them made as light as may be, lest they by their weight become troublesome to the affected part. But for their length, breadth, and number, let them be fitted agreeable to the part whereto they must be used. Let also their figure be streight or crooked according to the condition of the member whereto they must be applyed. You must have a speciall care, that they run not so far as the swellings out, or eminencies of the bones; as the ancles, knees, elbows, and the like, lest they hurt them by their pressure: also you must have a care, that they be smaller at their ends, and thicker in their middles, whereas they lye upon the broken bone. The use of splints is, to hold fast and firm, that they may stir no way the broken and luxated bones, after they be set and restored to their places. That they performe this use, it is fit there be no thick boulsters under them, nor over many rowlers; for so through so thick a space, they would not so straitly presse the part. Junks are made of sticks the bigness of ones finger, wrapped about with rushes, and then with linnen cloth: they are principally used in fractures of the thighs and legs. Cases are made of plates of latin, or else of some light wood; their use is, to contain the bones in their due figure, when the Patient is to be carried out of one bed or chamber into another, or else hath need to go to stool: lastly, if we must rest somewhat more strongly upon the broken or luxated members, these Cases will hinder the bones from stirring or flying out on the right side or left, above or below, we sleeping or waking, being willing or unwilling; and in like sort lest being not as yet well knit, or more loosly bound up for fear of pain, inflammation, or a gangrene, they hang downe, fall, or fly in sunder by reason of the inequalities of the bed. Such Cases, Junks, and the like, which serve for restoring and fast holding of broken and luxated bones, we may, according to *Hippocrates* his mind, call them in generall *Glossocomia*. All which things, the young Surgeon, which is not as yet exercised in the works of Art, can scarce tell what they are. But in the mean time, whilest that he may come to be exercised therein, or see others perform these operations, I, as plainly as possibly I could, have in words given him their portraiture or shape.

The matter of Splints.

Their use.

What Junks are.

The matter and use of Cases.

*Glossocomium*, a generall name for such things.

*The end of the Fourteenth Booke.*

# OF FRACTVRES.

## THE FIFTEENTH. BOOK.

## CHAP. I. *What a Fracture is, and what the differences thereof are.*

A Fracture, in *Galens* opinion, is the solution of continuity in a bone, which by the Greeks is called *Catagma*. There are many sorts of hurting or offending the bones: as the drawing them asunder, luxation, or putting them out of joint; their unnaturall growing together, their cutting or dividing asunder; contusion, abscesse, putrefaction, rottennesse, laying bare the *periosteum* being violated or lost; and lastly, that whereof we now treat, a Fracture. Again, the varieties of Fractures are almost infinite. For one is complete and perfect, another imperfect; one runs long-wise, another transverse, another oblique; one while it is broken into great pieces, another while into little and small scales, which have either a blunt, or else a sharp end, and prick the adjacent bodies of the muscles, nerves, veins or arteries. It sometimes happens, that the bone is not broken into splinters, that is, long-wayes, but together, and at once into two peeces overthwart, which Fracture is called *Raphanedon*, that is, after the manner of a Radish.

*Lib. 6. method.*

What it is for a bone to be broken *Raphanedon*.

A Fracture is made *Caryedon*, or like a nut, when as the bone flyes into many small peeces, severed each from other, as when a Nut is broken with a hammer, or mallet upon an Anvile: Which fracture is also termed *Alphitidon*, by reason of the resemblance it hath to meal or flour; and such is often seen in fractures made by bullets, shot out of guns and such fiery Engins. Contrary to these are those fractures which are called *Schidacidon*, as rent into splinters, or after the manner of a boord or peece of timber, that is, right-down, and alongst the bone: and these fractures are either apparent to the eye, or else not apparent, and therefore called Capillarie, being so small, as that they cannot be perceived by the eye, unlesse you put ink upon them, and then shave them with your Scrapers. Sometimes the bone is only pressed down with the stroke, sometimes in the contrary it flyes up, as if it were vaulted. They call it attrition, when the bone is broken into many small fragments, and as it were scales or chips. The fragments of fractured dones are sometimes smooth and polished, otherwhiles unequall, and as it

What *Caryedon*, or *Alphitidon*.

What *Schidacidon*.

were sharp and rough with little teeth, or pricks. Some fractures touch only the surface of the bone, fetching off only a scale; otherſome change not the site of fractured bones, but only cleaves them length-wayes, without the plucking away of any fragment; otherſome penetrate even to their marrow. Furthermore ſome fractures are ſimple and alone by themſelves; otherſome are accompanied with a troop of other affects and ſymptomes; as a wound, hæmorrhagie, inflammation, gangrene, and the like. Hereunto you may alſo adde the differences drawn from the parts which the Fractures poſſeſſe; as from the head, ribs, limbs, joints, and other members of the body. Adde alſo theſe which are taken from the habit of bodies, aged, young, full of ill humors, well tempered; almoſt all which have their proper and peculiar indications for curing. Now the cauſes of Fractures, are the too violent aſſaults or ſtroaks of all externall things, which may cut, bruiſe, break, or ſhake: in this number of cauſes may alſo be reckoned fals from high places, and infinite other things, which would be long and tedious to reckon up.

The cauſes of fractures.

## CHAP. II. *Of the ſigns of a Fracture.*

The firſt ſign of a broken bone.

WE may know by evident ſigns that a bone is broken: the firſt whereof and moſt certain, is, when by handling the part which we ſuſpect to the broken, we feel peeces of the bone ſevered aſunder, and hear a certain crackling of theſe peeces under our hands, cauſed by the attrition of the ſhattered bones. Another ſign is taken from the impotency of the part, which chiefly bewrayes it ſelf, when both the bones, the leg, and brace-bones, the ell and wand are broken. For if only the brace-bone or wand be broken, the Patient may go on his leg, and ſtir his arm: for the brace-bone ſerves for the ſuſtaining of the muſcles, and not of the body, as the leg bone doth. The third ſign is drawn from the figure of the part changed beſides nature: for it is there hollow, from whence the bone is flown or gone, but gibbous or bunching out whither it is run. Great pain in the interim torments the Patient by reaſon of the wronged *perioſteum*, and that membrane which involves the marrow and the ſympathy of the adjacent parts which are compreſſed or pricked.

Another.

A third.

## CHAP. III. *Of prognoſticks to be made in Fractures.*

WE muſt prognoſticate in Fractures whether they are to end in the deſtruction or welfare of the Patient; or whether their cure ſhall be long or ſhort, eaſie, or elſe difficult and dangerous; and laſtly, what accidents & ſymptomes may happen thereupon. He ſhall eaſily attain to the knowledg of all theſe things, who is not only well ſeen in the anatomicall deſcription of the bones, but alſo in the temper, compoſition and complexion of the whole body. Wherefore in the firſt place, I think good to admoniſh the Surgeon of this, that in winter when all is ſtiffe with cold, by a little fall, or ſome ſuch ſleight occaſion, the bones may be quickly and readily broken. For then the bones, being dried, by the dryneſs of the air encompaſſing us, become more brittle; which every one of the Vulgar uſually obſerve to happen both in waxen and tallow candles: but when the ſeaſon is moiſt, the bones are alſo more moiſt, and therefore more flexible and yeelding to the violence of the obvious and offending body. Wherefore alſo you may gather this to the framing of your Prognoſticks, That bones by reaſon of their naturall drineſs are not ſo eaſily agglutinated and conſolidated as fleſh; though in Children, according to *Galen*, by reaſon of the abundance of their humidity, the loſt ſubſtance may be repaired, according (as they term it) to the firſt intention, that is, by reſtoring of the ſame kind of ſubſtance or matter. But in others, about the Fractures a certain hard ſubſtance uſually concreats, of that nouriſhment of the broken bone which abounds, which glues together the fragments thereof, being fitly put together. This ſubſtance is then termed a *Callus*, and it is ſo hardened in time, that the bone thereafter in the broken part is ſeen to be more firm and hard than it is in any other: therefore that uſuall ſaying in Phyſick is not without reaſon; That reſt is neceſſary for the uniting of broken bones. For the *Callus* is eaſily diſſolved, if they be moved before their perfect and ſolid agglutination. The matter of a *Callus* ought to be indifferent, and laudable in quantity and quality, even as blood which flowes for the regeneration of the loſt fleſh in wounds. It is fit, that there may be ſufficient matter for ſuch a *Callus*, that the part have a laudable temper, otherwiſe there either will be no *Callus*, or certainly it will grow more ſlowly. Fractures are far more eaſily repaired in young bodies than in old: for in theſe there is plenty of the primigenious and radicall moiſture, that is laudably holding and glutinous; and in the other there is ſtore of watriſh and excrementitious. By this you may eaſily conjecture, that you cannot certainly ſet down a time neceſſary for the generating a *Callus*: for in ſome it happens later, in ſome ſooner: the cauſe of which variety is alſo to be referred to the conſtitution of the year and region, the temper and diet of the Patient, and manner of Ligation. For, thoſe Patients whoſe powers are weak, and blood watriſh and thin, in theſe the generation of a *Callus* uſes to be more ſlow: On the contrary, ſtrong powers haſten to agglutinate the bones, if there be plenty of groſſe and viſcous matter; whereby it comes to paſſe, that meats of groſſer nutriment are to be uſed, and medicins applyed which may help forwards the endeavour of nature, as we ſhall declare hereafter. When the bones are broken near unto the joints, the motion afterwards uſes to be more difficult, eſpecially if the *Callus*, which is ſubſtituted, be ſomewhat thick and bunching forth. But if, together with the violence and force of the Fracture, the joints ſhall be broken and bruiſed, the motion will not only be loſt, but the life brought in danger, by reaſon of the greatneſs of the inflammation, which uſually happens in ſuch affects, and the exceſſe of pain in a tendinous body. Theſe fractures wherein both the bones of the arm or leg are broken, are more difficult to cure, than thoſe which happen but to one of them. For they are handled and kept in their places with more difficulty.

Why bones are more brittle in froſtie weather.

Why the ſolution of continuity in bones is not ſo eaſily repaired. *Gal. in arte par.*

Why bones ſooner knit in young bodies.

Meats of groſſe and tough nouriſhment conduce to the generation of a *Callus*.

Fractures at joint dangerous.

ficulty,becauſe that which remains whole, ſerves the other for a reſt or ſtay to which it may lean. Moreover,there is longer time required to ſubſtitute a *Callus* to a great bone,than to a little one. Again theſe bones which are more rare and ſpungie,are ſooner glued together by the interpoſition of a *Callus*,than theſe which are denſe and ſolid. A *Callus* ſooner growes in ſanguin,than in cholerick bodies. But broken bones cannot be ſo happily agglutinated,nor reſtored in any body,but that alwayes ſome aſperity or unequall protuberancy may be ſeen on that part where the *Callus* is generated. Wherefore the Surgeon ought to make artificiall Ligations, that the *Callus* may not ſtand out too far, nor ſink down too low. That Fracture is leaſt troubleſome which is ſimple;on the contrary,that is more troubleſome which is made into ſplinters.but that is moſt troubleſome and worſt of all which is in ſmall and ſharp fragments,becauſe there is danger of convulſion by pricking a nerve,or the *perioſteum*. Sometimes the fragments of a broken bone keep themſelves in their due place:they alſo oft-times fly forth thereof,ſo that one of them gets above another;which when it happens,you may perceive an inequality by the depreſſion of the one part and the bunching forth of the other, as alſo pain by the pricking: beſides alſo the member is made ſhorter than it was,and than the ſound member on the oppoſite ſide is,and more ſwoln by the contraction of the muſcles towards their originall. Wherefore when a bone is broken,if you perceive any thing ſo depreſſed,preſently putting your hand on both ſides above and below,ſtretch forth the bone as forcibly as you can; for otherwiſe, the muſcles and nerves, ſtretched and contracted,will never of their own accord ſuffer the bones to be reſtored to their proper ſeat and themſelves. This extenſion muſt be performed in the firſt dayes, for afterwards there will happen inflammation:which being preſent,it is dangerous to draw the nerves and tendons too violently; for hence would enſue an impoſtume, convulſion,gangrene and mortification. Therefore *Hippocrates* forbids you to defer ſuch extenſion untill the third, or fourth day. Fractures are thought dangerous, whoſe fragments are great,and fly out,eſpecially in theſe bones which are filled with marrow on the inſide. When broken or diſlocated bones cannot be reſtored to themſelves and their naturall place, the part waſts for want of nouriſhment;both for that the naturall ſite of the veins, arteries and nerves is perverted,as alſo becauſe the part it ſelf lies immovable, or ſcarce movable: whereby it cometh to paſſe,that the ſpirits do not freely flow thereto,as neither the nutritive juice cometh thither in ſufficient plenty. When the diſlocated or broken member is troubled with any great inflammation, it is doubtfull whether or no a convulſion will happen,if we attempt to reſtore it,or the parts thereof to their ſeat:therefore it is better,if it may be done,to defer the reducing thereof ſo long, untill the humor which poſſeſſes the part be diſſolved,the tumor abated, and the bitterneſs of pain mitigated.

*Hipp.ſect. 18.& 19. ſect.1.de fracturis.*

Ligations conduce to the handſomnes of a *Callus*.

Extention muſt preſently be made after the bone is broken.

*Sent.36.ſect. 3.de fract.*

In inflammations the reſtoring of the bone muſt not be attempted.

## CHAP. IV. *The generall cure of broken and diſlocated bones.*

TO cure a broken and diſlocated bone,is to reſtore it to its former figure and ſite. For the performance whereof,the Surgeon muſt propoſe three things to himſelf: The firſt is, to reſtore the bone to its place: The ſecond is,that he contain or ſtay it being ſo reſtored: The third is,that he hinder the increaſe of malign ſymptomes and accidents; or elſe if they do happen, that then he temper and correct their preſent malignity. Such accidents are pain, inflammation, a feaver,abſceſſe,gangrene and ſphacell. For the firſt intention,you may eaſily reſtore a broken or diſlocated bone,if preſently,as ſoon as the miſchance is got,or elſe the ſame day, you endeavour to reſtore it:for the bitterneſs of pain or inflammation,which may trouble the Patient, is not as yet very great, neither is the contraction of the muſcles upwards as yet very much or ſtubborn. Therefore firſt of all, the Patient with his whole body,but eſpecially with the broken or diſlocated part,as alſo the Surgeon, muſt be in ſome place which hath good and ſufficient light. Then let truſty and skilfull attendants be there,good ligatures,and alſo,if need ſo require,good engins. His friends which are preſent, let them ſee and hold their peace,neither ſay,nor do any thing which may hinder the Work of the Surgeon. Then putting one hand above,that is,towards the center of the body, and the other below, as neer as he can to the part affected,let him ſtretch forth the member: for if you lay your hand any diſtance from the part affected,you will hurt the ſound part by too much compreſſion, neither will you much avail your ſelf by ſtretching it at ſuch a diſtance. But if you only endeavour below with your hand or ligature,aſſiſting to make extenſion thereof, it will be dangerous if there be nothing above which may withſtand or hold,leſt that you draw the whole body to you. This being done, according as I have delivered,it is fit the Surgeon make a right or ſtreight extenſion of the part affected:for when the bone is either broken or out of joint, there is a contraction of the muſcles towards their originall,and conſequently of the bones by them,as it is obſerved by *Galen*. Wherefore it is impoſſible to reſtore the bones to their former ſeat,without the extenſion of the muſcles. But the part being thus extended,the broken bones will ſooner and more eaſily be reſtored to their former ſeat. Which being reſtored,you ſhall preſently with your hand preſſe it down,if there be any thing that bunches or ſtands out. And laſtly you ſhall bind it up,by applying boulſters and ſplints as ſhall be fit. But if the bone be diſlocated or forth of joint,then preſently after the extenſion thereof, it will be requiſite to bend it ſomewhat about,and ſo to draw it in. The Surgeon is ſometimes forced to uſe engins for this work, eſpecially if the luxation be inveterate, if the broken or luxated bones be great; and that in ſtrong and ruſtick bodies,and ſuch as have large joints:for that then there is need of greater ſtrength, than is in the hand of the Surgeon alone. For,by how much the muſcles of the Patient are the ſtronger, by ſo much will they be contracted more powerfully upwards towards their originals. Yet have a care that you extend them not too violently,leſt by rending and breaking aſunder the muſcles and nerves, you cauſe the forementioned ſymptomes,pain,convulſion,a palſie and gangrene: all which ſooner happen to ſtrong and aged bodies,than to children,eunuches,women,youths,and generally all moiſt bodies,

Three things to be performed in curing broken and diſlocated bones.

How to put the bones in their places.

*Hipp.ſent. 60.ſect.2.de fract.*

*Ad ſent.1. ſect.1. de fract.*

When inſtruments or engins are neceſſary.

What bodies are sooner hurt by violent extension.

for that they are less hurt by violent extension and pulling, by reason of their native and much humidity and softness. For thus skins of leather, moistened with any liquor, are easily retched, and drawn out as one pleaseth: but such as are dry and hard, being lesse tractable, will sooner rend and tear, than stretch further out. Therefore the Surgeon shall use a mean in extending and drawing forth of members, as shall be most agreeable to the habits of the bodies. You may know the bone is set, and the setting performed as is fit, if the pain be asswaged; to wit, the fibres of the muscles, and the other parts being restored to their former site, and all compression, which the bones moved out of their places have made, being taken away; if, to your feeling there be nothing bunching out, nor rugged, but the surface of the member remain smooth and equall; and lastly, if the broken or dislocated member compares with its opposite in the composure of the joints, as the knees and ancles answer justly and equally in length and thickness. For which purpose it must not suffice the Surgeon to view it once, but even as

Signs of a bone well set.

Causes and signs of the relapse of a set bone.

often as he shall dresse it. For it may happen, that the bone which is well set, may by some chance, as by the Patients unconsiderate turning himself in his bed, or as it were a convulsive twitching of the member or joints whilst he sleeps, the muscles of their own accord contracting themselves towards their originals, that the member may again fall out; and it will give manifest signs thereof by renewing the pain, by pressing or pricking the adjacent bodies: which pain will not cease, before it be restored to its place: and hereof the Surgeon ought to have diligent care. For if, whilst the *Callus* is in growing, one bone ride over another, the bone it self will afterwards be so much the shorter, and consequently the whole member; so that if this errour shall happen in a broken leg, the Patient will halt ever after, to his great grief, and the Surgeons shame. Wherefore the Patient shall take heed, as much as in him lyes, that he stir not the broken member, before that the *Callus* be hardned. Such diligent care needs not be had in dislocations. For these once set, and artificially bound up, do not afterwards so easily fall forth as broken bones. The second scope is, that the bones wich shall be restored may be firmly kept in their state and place. That shall be done by Bandages; as ligatures, boulsters, and other things, whereof hereafter we shall make particular mention. Hither tend proper and fit medicins, to wit, applying of oil of Roses with the whites of Egs, and the like repelling things; and then resolving medicins, as the present necessity shall require. It will be convenient, to moisten your rowlers & boulsters in oxycrate for this purpose, or else in Rose vinegar, if the Fracture be simple, or with red wine,

*Ad. sent. 21. sect. 1. de fract.*

or the like liquor warm (in *Galens* opinion) if a wound be joined to the fracture; and it will be fit to moisten fractures oftner in Summer: For so the part is strengthened, the defluxion being repelled, whereby the inflammation and pain are hindred. You must desist from humecting and watering the part when the symptomes are past, lest you retard the generating of a *Callus*; for which you must labour by these means which we shall hereafter declare. To this purpose also conduces the rest and lying of the part in its proper figure and site accustomed in health, that so it may the longer remain in the same place unstirred. Besides also, it is expedient then only to dresse the part, when it is needfull,

What the middle figure is and why best.

and with those things that are requisite, shunning, as much as may be, inflammation and pain. That figure is thought the best, which is the middle, that is, which contains the muscles in their site, which is without pain; so that the Patient may long endure it without labour or trouble. All these things being performed, the Patient must be asked, whether the member be bound up too strait? If he answer, No, (unlesse peradventure a little upon the fracture or luxation, for there it is fit it should be more

Fit time for loosing of Ligatures in fractures and dislocations.

straitly bound) then may you know that the binding is moderate. And this same first ligation is to be kept in fractures without loosing for three or four dayes space, unlesse peradventure pain urge you to the contrary. In dislocations the same binding may be kept for seven or eight dayes, unless by chance some symptome may happen, which may force us to open it before that time: for the Surgeon must with all his art have a care to prohibit the happening of evill accidents and symptomes, which, how he may bring to passe, shall be declared in the following Chapter.

## CHAP. V. *By what means you may perform the third intention in curing fractures and dislocations, which is, the hindring and correction of accidents and symptomes.*

Four choice means to hinder accidents.

THat we may attain unto this third scope, it is requisite we handle as gently and without pain, as we may, the broken or dislocated member, we drive away the defluxion ready to fall down upon the part by medicins, repelling the humor, and strengthening the part; we, by appointing a good diet, hinder the begetting of excrements in the body, and divert them by purging and phlebotomy. But if these accidents be already present, we must cure

The causes and differences of itching.

them according to the kind and nature of each of them: for they are various. Amongst which is reckoned itching, which in the beginning torments the Patient: this ariseth from a collection and suppression of subacrid vapours, arising from the blood, and other humors under the skin. Whence a light biting, which causeth a simple itch, or else a more grievous and acrid one, from whence (in *Galens* opinion) proceeds a painfull itching. Wherefore such matter, as the cause, being evacuated, all itching ceaseth. But this cannot easily and freely be evacuated and breathed out, because the pores of the part are

*Ad sent. 4. sect. 1. de fract.*

shut up, and as it were oppressed with the burden of the emplaisters, boulsters, and ligatures, which are put about the part. Hereunto may be added, that the part its self doth not so perfectly perform and enjoy its wonted faculties and actions: by which it commeth to passe, that the heat thereof is more

Remedies against the itching.

languid than may suffice to discusse the fuliginous matter there collected. Wherefore it will be convenient to loose the ligatures every third day, that as by loosing their tyes, their sanious and fuliginous excrements, shut up under the skin, may freely passe forth, lest in continuance they should fret and ulcerate it; as it happens to most of those who provide not for it by loosing their ligatures. Besides also, the part must be long fomented with hot water alone, or else with a decoction of sage, chamomile,

roses,

roſes,and melilot made in wine and water : for long fomenting attenuates and evacuates, but ſhorter fils and mollifies,as it is delivered by *Hippocrates*. Alſo gentle frictions, performed with your hand, or a warm linnen cloth upwards, to the right ſide and left, and circularly to every ſide, are good. But if the skin be already riſen into bliſters,they muſt be cut,leſt the matter contained thercunder may corrode and ulcerate the skin:then muſt the skin be anointed with ſome cooling and drying medicin; as,*ung.album Camphoratum Rhaſis,Deſiccativum rubrum,unguentum roſatum ſine aceto*;adding thereto the powder of a rotten poſt,or prepared *Tutia*,or the like.Other accidents more grievous than theſe, do often happen,but we will treat of them hereafter.But if the ſcales of the bone underneath be quite ſevered from the whole,then muſt they be preſently taken forth,eſpecially if they prick the muſcles:but if the bone be broken into ſplinters,and ſo prominent out of the wounded fleſh as that it cannot be reſtored into its ſeat,it muſt be cut off with your cutting mallets, or parrats beak, as occaſion ſhall offer its ſelf.In the interim you muſt have a care that the part enjoy perſpiration, and by change of place and riſing,now and then it may be as it were ventilated : alſo you muſt ſee that it be not over-burdened, neither too ſtrait bound, otherwiſe it will be apt to inflammation. Thus much concerning fractures and diſlocations in generall : now we muſt deſcend to particulars, beginning with the fracture of the Noſe. *Hipp.ſent. 46 ſect.3.de fract.*

## CHAP. VI. *Of the Fracture of the Noſe.*

THe Noſe is griſtly in its lower part,but bony in the upper. Wherefore it ſuffers no fracture in the griſtly part(unleſs peradventure a *Sedes*)but only a depreſſion,diſtortion or contuſion.But a fracture often happens to the bony part,and ſo great a depreſſion to the inner ſide, that unleſs it be provided for by diligent reſtoring it, the noſe will become flat, or wreſted aſide,whence there will be difficulty of breathing. That this kind of fracture may be reſtored,that bone which ſtands too far out,muſt be preſſed down ; but that which is depreſt, muſt be lifted up with a ſpathern,or little ſtick handſomely faſhioned and wrapped about with cotten or a linnen rag,ſo to avoid pain. Therefore you ſhall hold the ſpathern in one hand, and reduce and order it with the other.The bone being reſtored, directories or tents of a convenient bigneſs ſhall be put into the noſe;which tents ſhall be made of ſponge, or flax, or a peece of a beaſts or ſheeps lungs. For theſe things are ſoft,and do not only hinder the bones of the Noſe that they fall no more, but alſo lift them up higher. And then the Noſe ſhall be in ſome ſort ſtayed with boulſters on each ſide, even untill the perfect agglutination of the bones,leſt the figure and ſtraitneſs ſhould be vitiated and ſpoiled. I have oft-times put golden,ſilver and leaden pipes into fractured noſes, and faſtned them with a thred to the Patients night-cap, which, by one and the ſame means, kept the bones from being again depreſt,gave the matter free paſſage forth,and nothing hindred the breathing. In the mean time we muſt ſee,that we do not preſſe the Noſe with too ſtrait binding,unleſſe peradventure ſome other thing perſwade;leſt they become either too wide,too flat,or crooked. If any wound accompany the fracture,that ſhall be cured after the ſame manner,as the wounds of the head. The fracture reſtored, the following medicin,which hath a faculty to repel and repreſſe the defluxion, to ſtrengthen and keep the part in its due poſture,and to dry up and waſt the matter which hath already fallen down, ſhall be applyed to the Noſe,and all the other dry parts. ℞ *thuris, maſtiches, boli armeniæ, ſanguinis draconis, an.* ℥ß. *aluminis rochæ,reſinæ pini.an.* ʒij. *pulveriſentur ſubtiliſſimè :* Or elſe, ℞ *farinæ volatilis* ℥ß. *albuminum ovorum quantum ſufficit,incorporentur ſimul,& fiat medicamentum.*

*Hipp.ſent. 46.ſect.2.de art.*

How to reduce the noſe into its naturall figure.

A fit aſtringent and drying medicin.

Neither ſhall you uſe any other art to cure the cartilagineous part of the noſe being fractured. Wherefore *Hippocrates* termes that ſolution of continuity what there happens, A fracture, as if it were in a bone;becauſe he could find no other name more fitly to expreſſe it:for a griſtle, next to a bone,is the hardeſt of all the parts of our body. A *Callus* uſes to grow in fractured noſes, unleſſe ſomething hinder within the ſpace of twelve or fifteen dayes. *Sent. 47.ſect. 2. de art. & Gal.in Com.*

## CHAP. VII. *Of the fracture of the lower Jaw.*

THe lower Jaw runnes into two,as it were,horns or tops : the one whereof ends ſharp, and receives a tendon from the temporall muſcle ; the other ends blunt and round under the mammillary proceſs,and it is there implanted in a ſmall cavity;it is joined together in the middle of the chin by *Symphyſis*, and is marrowie within.The Fracture,which happens thereto,is reſtored by putting your fingers into the Patients mouth, and preſſing them on the inſide and outſide,that ſo the fractured bones put together may be ſmoothed and united. But if they be broken wholly athwart,ſo that the bones lye over each other, extenſion muſt be made on both ſides on contrary parts,upwards and downwards, whereby the bones may be compoſed and joined more eaſily to one another. The teeth in the mean while, if they be either ſhaken or removed out of their ſockets,muſt be reſtored to their former places, and tyed with a gold or ſilver wyer, or elſe an ordinary thred, to the next firm teeth,untill ſuch time as they ſhall be faſtened,and the bones perfectly knit by a *Callus*. To which purpoſed the ordered fragments of the fractured bone ſhall be ſtayed, by putting a ſplint on the outſide,made of ſuch leather as ſhoe ſoals are made ; the midſt thereof being divided at the Chin,and of ſuch length and breadth as may ſerve the Jaw : then you ſhall make ligation with a ligature two fingers broad, and of ſuch length as ſhall be ſufficient, divided at both the ends;and cut longwayes in the midſt thereof;that ſo it may engirt the chin on both ſides. Then there will be four heads of ſuch a ligature ſo divided at the ends;the two lower whereof being brought to the crown of the head,ſhall be there faſtned and ſowed to the Patients night-cap. The two upper

A deſcription of the lower Jaw. The manner of reſtoring a broken Jaw.

The deſcription of a fit ligature for the under Jaw.

drawn athwart ſhall likewiſe be ſowed as artificially as may be, to the cap in the nape of the neck. It is a moſt certain ſign, that the Jaw is reſtored and well ſet, if the teeth faſtened therein ſtand in their due rank and order. The Patient ſhall not lye down upon his broken jaw, leſt the fragments of the bones ſhould again fal out, and cauſe a greater defluxion. Unleſſe inflammation, or ſome other grievous ſymptome ſhall happen, it is ſtrengthened with a *Callus* within twenty dayes; for that it is ſpungious, hollow, and full of marrow, eſpecially in the midſt thereof: yet ſometimes, it heals more ſlowly, according as the temper of the Patient is, which takes alſo place in other fractured bones. The agglutinating and repelling medicin, deſcribed in the former chapter, ſhall be uſed; as alſo others, as occaſion ſhall offer it ſelf. The Patient muſt be fed with liquid meats, which ſtand not in need of chewing, untill ſuch time as the *Callus* ſhall grow hard, leſt the ſcarce or ill-jointed fragments ſhould fly in ſunder with the labour of chewing. Therefore ſhall he be nouriſhed with water-grewell, ponadoes, cullaſſes, barley creams, gellies, broths, rear egs, reſtaurative liquors, and other things of the like nature.

In what time it may be healed.

## CHAP. VIII. *Of the fracture of the Clavicle or Collar-bone.*

AS the nature and kind of the fractured Clavicle ſhall be, ſo muſt the cure and reſtoring thereof be performed. But howſoever this bone ſhall be broken, alwayes the end faſtned to the ſhoulder and ſhoulderblade, is lower than that which is joined to the cheſt; for that the arm drawes it downwards. The collar-bone, if broken athwart, is more eaſily reſtored and healed, than if it be cloven long-wayes. For, every bone broken athwart doth more eaſily return into its former ſtate or ſeat, whiles you lift it up on this or that ſide with your fingers. But that which is broken *ſchidacidon*, or into ſplinters, or long-wayes, is more difficultly joined and united to the ends and fragments: for thoſe peeces, which were ſet, will be plucked aſunder, even by the leaſt motion of the arms; and that which was knit with the ſhoulder, will fall down to the lower part of the breaſt. The reaſon of which is, the collar-bone is not moved of its ſelf, but conſents in motion with the arm. In reſtoring this or any other fracture, you muſt have a care that the bones ride not one over another, neither be drawn nor depart too farre in ſunder: therefore it will be here convenient, that one ſervant draw the arm backwards, and another pull the ſhoulder towards him the contrary way; for ſo there will be made, as I may ſo term it, a counter-extenſion. While which is in doing, the Surgeon with his fingers ſhall reſtore the fracture, preſſing down that which ſtood up too high, and lifting up that which is preſſed down too low. Some, that they may more eaſily reſtore this kind of fracture, put a clew of yarn under the Patients arm-pit; ſo to fill up the cavity thereof: then they forcibly preſſe the elbow to the ribs, and then force the bone into its former ſeat. But if it happen, that the ends of the broken bones ſhall be ſo depreſt, that they cannot be drawn upwards by the forementioned means: then muſt the Patient be laid with his back, juſt between the ſhoulders, upon a pillow hard ſtuffed, or a tray turned with the bottome upwards, and covered with a rug or ſome ſuch thing. Then the ſervant ſhall ſo long preſſe down the Patients ſhoulders with his hands, untill the ends of the bones, lying hid and preſſed down, fly out and ſhew themſelves. Which being done, the Surgeon may eaſily reſtore or ſet the fractured bone. But if the bone be broken ſo into ſplinters that it cannot be reſtored, and any of the ſplinters prick and wound the fleſh, and ſo cauſe difficuty of breathing, you then muſt cut the skin even againſt them, and with your inſtrument lift up all the depreſſed ſplinters, and cut off their ſharp points; ſo to prevent all deadly accidents, which thereupon may be feared. If there be any fragments, they, after they are ſet, ſhall be covered with a knitting medicin made of wheat floure, frankincenſe, bole armenick, *ſanguis draconis*, *reſina pini*, made into powder, and mixed with the whites of egs, putting upon it ſplints, covered with ſoft worn linnen rags; covered over likewiſe with the ſame medicin, and then three boulſters dipped in the ſame; two whereof ſhall be laid upon the ſides, but the third and thickeſt upon the prominent fracture, ſo to repreſſe it and hold it in. For thus the fragments ſhall not be able to ſtir or lift themſelves up further than they ſhould, either to the right ſide or leſt. Now theſe boulſters muſt be of a convenient thickneſs and breadth, ſufficient to fill up the cavities which are above and below that bone. Then ſhall you make fit ligation with a rowler, having a double head caſt croſſe-wiſe, of a hands breadth, and ſome two ells and a half long, more or leſs, according to the Patients body. Now he ſhall be ſo rowled up, as it may draw his arme ſomewhat backwards, and in the interim his arm-pits ſhall be filled with boulſters, eſpecially that next the broken bone; for ſo the Patient may more eaſily ſuffer the binding. Alſo you ſhall wiſh the Patient, that he of himſelf bend his arm backwards, and ſet his hand upon his hip, as the Country Clownes uſe to do, when they play at leap-frog. But how great diligence ſoever you uſe in curing this ſort of fracture, yet can it ſcarce be ſo performed, but that there will ſome deformity remain in the part: for that a ligature cannot be rowled about the collar-bone, as it may about a leg or an arme. A *Callus* oft-times growes on this bone, within the ſpace of twenty dayes, becauſe it is rare and ſpongious.

*Hipp. ſent. 63 ſect. 1. deart.*

How to reſtore the fractured Clavicle. The firſt way.

The ſecond way.

The third way.

How to bind up the fractured clavicle.

It is a difficult matter perfectly to reſtore a fractured clavicle.

## CHAP. IX. *Of the fracture of the ſhoulder-blade.*

THe Greeks call that *Omoplata*, which the Latines terme *Scapula*, or *Scapulæ patella*, that is, the ſhoulder-blade. It is faſtned on the back to the ribs, nowle, the *Vertebræ* of the cheſt and neck; but not by articulation, but only by the interpoſition of muſcles, of which we have ſpoken in our Anatomie. But on the forepart it is articulated after the manner of other bones with the collar-bone, the ſhoulder, or arm-bone: for with its proceſſe, which repreſents a prick or thorn, and by ſome, for that it is more long and prominent, is called *Acromion*; (that is, as you would ſay, the top or ſpire of the ſaid ſhoulder-blade) it receives the collar-bone. Therefore ſome Anatomiſts, according to *Hippocrates*, as they ſuppoſe, call all this articulation of the collar-bone with the hollowed proceſſe

An anatomicall deſcription of the ſhoulder-blade.

ceſs of the ſhoulder-blade, *Acromion*. There is another proceſs of the ſaid blade-bone, called *Cervix omoplatæ*, or the neck of the ſhoulder-blade; this truly is very ſhort, but ending in a broad inſinuated head, provided for the receiving of the ſhoulder or arm bone. Not far from this proceſs is another, called *Coracoides*, for that the end thereof is crooked like a Crows beak. This keeps the ſhoulder bone in its place, and conduces to the ſtrength of that part. The ſhoulder blade may be fractured in any part thereof, that is, either on the ridge, which runs like a hill, alongſt the midſt thereof for its ſafety, as we ſee in the *vertebræ* of the back. So alſo in the broader part thereof it may be thruſt in and depreſt; and alſo in that articulation, whereby the top of the ſhoulder is knit to it. According to this variety of theſe fractured parts, the happening accidents are more grievous or gentle. How many wayes the ſhoulder blade may be broken.

We know the ſpine or ridge of the ſhoulder-blade to be broken, when a dolorificke inequality is perceived by touching or feeling it. But you may know, that the broader or thinner part thereof is depreſſed, if you feel a cavity, and a pricking paine moleſt the part, and if a numneſſe trouble the arme, being ſtretched forth. The fragments, if they yet ſtick to their bones and do not prick the fleſh, muſt be reſtored to their ſtate and place, and there kept with agglutinative medicines, and ſuch as generate a *Callus*, as alſo with boulſters and rowlers fitted to the place. But if they do not adhere to the bone, or pricke the fleſh lying under them, then muſt you make inciſion in the fleſh over againſt them, that ſo you may take them out with your Crows beak. But although they ſtir up and down, yet if they ſtill adhere to the *perioſteum* and ligaments, (if ſo be that they trouble not the muſcles by pricking them) then muſt they not be taken forth: for I have oftner than once obſerved, that they have within ſome ſhort time after grown to the adjacent bones. But if they, being wholly ſeparated, do not ſo much as adhere to the *perioſteum*, then muſt they neceſſarily be plucked away; otherwiſe within ſome ſhort ſpace after, they will be driven forth by the ſtrength of nature, for that they participate not any more in life with the whole. For that which is quick, ſaith *Hippocrates*, uſes to expell that which is dead far from it. The truth whereof was manifeſted in the Marques of *Villars*, who at the battell of *Dreux* was wounded in his ſhoulder with a Piſtoll bullet, certain ſplinters of the broken bone were plucked forth with the pieces of his harneſſe, and of the leaden bullet; and within ſome ſhort ſpace after, the wound was cicatrized, and fully and perfectly healed. But more than ſeven years after, a defluxion and inflammation ariſing in that place by reaſon of his labour in arms, and the heavineſs of his armour at the battell of *Mont-contour*, the wound broke open again; ſo that many ſhivers of the bone, with the reſidue of the leaden bullet, came forth of themſelves. But if the fracture ſhall happen in the neck of the ſhoulder-blade or dearticulation of the ſhoulder, there is ſcarce any hope of recovery; as I have obſerved in *Anthony* of *Burbon*, King of *Navarre*; *Francis* of *Lorrain*, Duke of *Guiſe*; the Count *Rhingrave Philibert*, and many other in theſe late civill Wars. For there are many large veſſels about this dearticulation, to wit, the axillary vein and artery, the nerves ariſing from the *Vertebræ* of the neck, which are thence diſſeminated into all the muſcles of the arm. Beſides, alſo inflammation and putrefaction ariſing there are eaſily communicated by reaſon of their neighbour-hood to the heart and other principal parts, whence grievous ſymptoms, and oft-times death it ſelfe enſues. The cure. *Lib. de vul. capitis.* A hiſtory. Nature of its own accord makes it ſelfe way to caſt forth ſtrange bodies and matters. Why a fracture in the joint of the ſhoulder is deadly.

## CHAP. X. *Of the fracture and depreſſion of the* Sternon, *or Breaſt-bone.*

THe *Sternum* is ſometimes broken, other whiles onely thruſt in without a fracture. The inequality perceivable by your feeling, ſhewes a fracture, as alſo the going in with a thruſt with your finger, and the ſound or noiſe of the bones crackling under your fingers. But a manifeſt cavity in the part, a cough, ſpitting of bloud, and difficulty of breathing by compreſſion of the membrane inveſting the ribs and the lungs, argue the depreſſion thereof. For the reſtoring of this bone, whether broken or depreſt, the Patient muſt be laid on his back with a cuſhion ſtuffed with tow or hay under the *vertebræ* of the back, as we ſet down in the ſetting of the collar bone. Then a ſervant ſhall lie ſtrongly with both his hands on his ſhoulders, as if he would preſs them down, whileſt the Surgeon, in the mean time preſſing the ribs on each ſide, ſhall reſtore and ſet the bone with his hand; and then the formerly deſcribed medicines ſhall be applyed for to hinder inflammation, and aſſwage pain; boulſters ſhall be fitted thereto, and a ligature ſhall be made croſſe wayes above the ſhoulders, but that not too ſtrait, leſt it hinder the Patients breathing. I by theſe means, at the appointment of *Anthony* of *Burbon* King of *Navar*, cured *Anthony Benand* a Knight of the order, who had his breaſt-plate bended and driven in, with an iron bullet ſhot out of a Field-peece, as alſo his *ſternum* together therewith, and he fell down as dead with the blow; he did ſpit bloud for three months after I had ſet the bone: yet for all this he lives at this day in perfect health. Signs that the *ſternum* is broken. Signs that it is depreſt. The cure. A hiſtory.

## CHAP. XI. *Of the fracture of the ribs.*

THe true ribs, for that they are bony, may be broken in any part of them. But the baſtard ribs cannot be truly broken unleſſe at the back bone, becauſe they are only bony in that part, but griſtly on the foreſide toward the breaſt bone; wherefore there they can only be folded or crooked in. Theſe which are ſubject to fractures, may be broken inwards and outwards. But oft-times it comes to paſs, that they are not abſolutely broken, but cleft into ſplinters, and that ſometimes inwards, but not outwards. Thus the fiſſure doth oft-times not exceed the middle ſubſtance of the rib; but ſometimes it ſo breaks through it all, that the fragments and ſplinters do prick and wound the membrane, which inveſts and lines them on the inſide, and then there is great danger. But when the fracture is ſimple without a wound, compreſſion, puncture of the membrane, and laſtly, without any other ſymptome, then the danger is leſſe. Therefore *Hippocrates* wiſheth, that theſe, who are thus affected, fill themſelves In what place the ſhort ribs may be broken.

more

*Sent. 56. sect. 3. de art.*

more freely with meat; for that moderate repletion of the belly, is (as it were) a certain prop or ſtay for the ribs, keeping them well in their place and ſtate; which rule chiefly takes place in fractures of the baſtard ribs. For ſuch as have them broken, uſually feel themſelves better after, than before meat. For emptineſs of meat, or of the ſtomach, makes a ſuſpenſion of the ribs, as not underpropped by the meat. Now that fracture which is outwardly, is far more eaſie to heal, than that which is inwardly; for that this pricketh the membrane or *Pleura*, and cauſeth inflammation, which may eaſily end in an *Empyema*. Adde hereunto, that this is not ſo eaſily to be handled or dealt withall, as the other: whereby it commeth to paſs, that it cannot be ſo eaſily reſtored; for that theſe things cannot be ſo fully and freely performed in this kinde of fracture, which are neceſſary to the ſetting of the bone, as to draw it out, hold it and join it together. It is therefore healed within twenty dayes, if nothing elſe hinder. The ſigns of fractured ribs are not obſcure; for by feeling the grieved part with your fingers, you may eaſily perceive the fracture by the inequality of the bones, and their noiſe or crackling, eſpecially if they be quite broke aſunder. But if a rib be broken on the inſide, a pricking pain, far more grievous then in a pluriſie, troubles the Patient; becauſe the ſharpe ſplinters prick the Coſtall membrane: whence great difficulty in breathing, a cough, and ſpitting of bloud enſue. For bloud, flowing from the veſſels broken by the violence of the thing cauſing the fracture, is (as it were) ſucked up by the lungs, and ſo by a dry cough carryed into the weazond, and at length ſpit out of the mouth. Some, to pull up the bone that is quite broken and depreſt, apply a cupping glaſſe, and that is ill done; for there is cauſed greater attraction of humours, and exceſs of pain by the preſſure and contraction of the adjacent parts, by the cupping glaſs, wherefore *Hippocrates* alſo forbids it. Therefore it is better to endeavour to reſtore it after this following manner. Let the Patient lye upon his ſound ſide, and let there be laid upon the fractured ſide an emplaiſter made of Turpentine, Roſin, black Pitch, wheat flour, maſtick, and aloes, and ſpread upon a ſtrong and new cloth. When it hath ſtuck there ſome time, then pluck it ſuddenly with great violence from below upwards; for ſo the rib will follow together therewith, and be plucked and drawn upwards. It is not ſufficient to have done this once, but you muſt do it often, untill ſuch time as the Patient ſhall finde himſelfe better, and to breath more eaſily. There will be much more hope of reſtitution, if, whileſt the Surgeon do this diligently, the Patient forbeare coughing, and hold his breath. Otherwiſe if neceſſity urge, as if ſharp ſplinters with moſt bitter tormenting pain prick the Coſtall membrane overſpread with many nerves, veins, and arteries, which run under the ribs, whence difficulty of breathing, ſpitting of bloud, a cough and fever enſue; then the only way to deliver the Patient from danger of imminent death, is to make inciſion on the part where the rib is broken, that ſo laying it bare, you may diſcern the pricking fragments, and take them out with your inſtrument, or elſe cut them off. And if you make a great wound by inciſion, then ſhall you ſew it up, and cure it according to the common rules of curing wounds. Now diet, phlebotomy, and purgation, which (as *Hippocrates* ſaith) are not very needfull in a ſimple fracture, for that there are no ſymptomes which may require ſuch remedies; yet they, by reaſon of the complicated ſymptomes, as a convulſion, feaver, *Empyema*, and the like, muſt here be preſcribed by the advice of the Phyſitian which overſees the cure. A Cerate, and other remedies fitting the occaſion, ſhall be applyed to the grieved part: no other ligatures can be uſed, than ſuch as are fit to hold faſt and ſtay the locall medicins. There is no other rule of ſite and lying, than ſuch as is taken from the will and content of the Patient.

VVhy an internal fracture of the ribs is deadly.

The ſignes.

The cauſe of ſpitting bloodwhen the ribs are broken.

*Sent. 15. ſect. 3. de art. Paulus lib. 6. cap. 96. Avicen. 4.*

The cure.

A ſimple fracture may be cured only by Surgery.

## CHAP. XII. *Of certain preternaturall affects which enſue upon broken ribs.*

MAny ſymptomes enſue upon fractured and contuſed ribs; but amongſt the reſt, there are two which are not common, whereof we will treat in this place. The firſt is, the inflation, or riſing up of the contuſed fleſh, which alſo enſues upon light affects of the bone, which have been neglected at the beginning. But the fleſh is not meerly puffed up of it ſelfe, but alſo with a certain phlegmatick, glutinous and viſcous humour gathering thereinto. The cauſe hereof is, the weakneſs of the digeſtive faculty of the part, occaſioned by the ſtroak and diſtemper; which therefore cannot aſſimilate the nouriſhment flowing more plentifully than it was wont, either drawn thither by means of the pain, or ſent thither by a blinde violence of nature, ſtirred thereto by a deſire of its own preſervation. Wherefore this halfe crude humor remaining there, raiſeth much flatuling from its ſelfe, or elſe wrought upon by the weaker heat, it is reſolved into cloudy vapours; whence it cometh to paſs, that the fleſh is ſwoln up in that place, and the skin on the contrary grows ſoft, as if it were blown up with a quil. Therefore laying your hand thereon, you may hear the noiſe of the winde going forth thereof, and ſee a cavity left in the part, as it is uſually ſeen in œdematous tumors. Unleſs you remedy this inflation, there will enſue an inflammation, feaver, abſceſs, difficulty of breathing; and laſtly, that ſecond kind of affect whereof we have determined to treat in this chapter, to wit, the putrefaction, corruption, or blaſting of the ribs. An abſceſſe, and the ſeparation of the fleſh from the bone is the cauſe hereof: for hence it cometh to paſs that the bone, deſpoiled of its naturall and fleſhly cloathing wherewith it was cheriſhed, is eaſily offended by the touch of the entring air, which it never formerly felt, and ſo at length it becometh (as it were) blaſted: which when it happens, they ſpit up filth, and ſo fall into a conſumption, and at length die. To withſtand all theſe inconveniencies, you muſt as ſpeedily as you can, reſtore the fractured bones by the former delivered means. And then this mucous tumor muſt be reſolved by proper heating and diſcuſſing medicins, and kept down by boulſters and rowlers; that ſo the fleſh may touch the bone, and cover it as it uſually did. But the ligature ſhall not be made ſo ſtrait, as to hinder the ribs from their wonted motion in expiration and inſpiration. If the tumor degenerate into an abſceſs, it ſhall be ſpeedily opened, leſt the matter, kept in too long, corrupt the bone which lyes under it, by the contagion of its putrefaction. The ulcer being opened, the matter ſhall be evacuated by putting a pipe into the ulcer; the end whereof ſhall be bound about with a thred, leſt it fall into the capacity of the cheſt, and that it may be drawn forth at your pleaſure.

The cauſe.

The ſignes.

The cure.

CHAP.

## CHAP. XIII. *Of the fracture of the Vertebræ, or rack bones of the back, and of their processes.*

THe *vertebræ* are some whiles broken, otherwhiles bruised, or strained on the inside, whereby it cometh to pass, that the membranes which invest the spinall marrow, as also the spinall marrow it self, are compressed and straitned, which cause many malign accidents; which, whether they be curable or not, may be certainly foretold by their magnitude. Amongst these symptomes, are the stupidity, or numness and palsie of the arms, legs, fundament, and bladder, which diminish, or else take away from them the faculty of sense and motion; so that their urine and excrements come from them against their wils and knowledg, or else are wholly suppresst. Which when they happen (saith *Hippocrates*) you may foretell that death is at hand, by reason that the spinall marrow is hurt. Having made such a prognostick, you may make an incision, so to take forth the splinters of the broken *vertebræ*, which driven in, press the spinall marrow, and the nerves thereof. If you cannot do this, at least you shall apply such medicins as may asswage pain, and hinder inflammation; and then the broken bones shall be restored to their places, and contained therein by those means which we shall mention when we come to treat of the luxation of the spine. But if that the processes only of the *vertebræ* be broken, the fragments shall be put in their places, unless they be quite severed from their *periosteum*. But if they be severed, you shall open the skin and take them forth, and then dress the wounds as is fit. We understand that only the processes of the *vertebræ* are broken, if in the absence of the forementioned symptoms of numness and the palsie, you laying your finger upon the grieved part, feel something, as a bony fragment, shaking and moving thereunder, with a certain crackling noise, and cavity, and depression; and then, if when the Patient holds down his head, and bends his back, he feel far more pain, than when he stands up streight upon his feet. For in stooping, the skin of the back is somewhat stretched forth, and extended, and also forced upon the sharp splinters of the fragments, whence proceeds a dolorifick solution of continuity, and a pricking: in standing streight up, on the contrary, the stretched skin is relaxed, and consequently less molested by the sharp fragments. The fractured processes of the *vertebræ* easily heal, unless they be associated with some other more grievous symptome which may hinder; such as is a certain great contusion, and the like. For as we formerly said out of *Hippocrates*, all rare and spongy bones are knit by a *Callus* within a few dayes.

The affects of the *vertebræ*.

*Sect.* 2. *Prorb.*

The cure of fractured *vertebræ*.

The cure of the processes.

Signs that onely the processes are fractured.

## CHAP. XIV. *Of the fracture of the holy-bone.*

ALso the holy bone in a certain part thereof, which may be easily healed, may be broken by the blow of bruising things, as by a bullet shot out of a musket, as I have observed in many. But if the fracture violate, together with the *vertebræ* thereof, the spinall marrow contained therein, then the Patient can scarce scape death, for the reasons shewed in the former chapter.

What fracture of the holy bone curable, and what not.

## CHAP. XV. *Of the fracture of the rump.*

THe Rump is composed of four bones; the first whereof hath a cavity, wherein it receives the lowest *vertebræ* of the holy bone; the other three are joined together by *Symphysis* or Coalition; at the end of these hangs a certain small gristle. The fracture of these bones shall be cured by putting your finger into the Patients fundament, and so thrusting it even to the fractured place. For, thus you may thrust the fragment forth, and fit and restore it to the rest of the bones by your other hand lying upon the back. But that it may be the sooner healed, it is fit the Patient keep his bed, during all the time of the cure. But if there be a necessity to rise, he shall so sit in a perforated seat, that there may be nothing which may press the broken part; and fitting remedies for healing fractures shall be applyed as occasion shall offer it selfe.

The description of the rump. The cure.

## CHAP. XVI. *Of the fracture of the Hip, or* Os Ilium.

THe Hip consists of three bones: the first is named *Os Ilium*, the haunch bone; the other, *Os Ischion*, the huckle bone; the third *Os pubis*, the share bone. These three bones in men of full growth are so fast knit and joined together, that they can by no means be separated; but in children they may be separated without much a do. This bone may be broken in any part thereof, either by a stroak, or by a fall from high upon any hard body. You shall know the fracture by the same kind of signs, as you know others, to wit, pain, pricking, a depressed cavity, and inequality, and also a numness of the leg of the same side. The splinters of the bones (if quite broke off) must by making incision be taken away at the first dressing; in performance of which operation, you must have a care that you hurt not with your instrument the heads of the muscles, nor any vessels, especially which are great; nor lastly, that large nerve which is sent into the muscles of the thigh and leg. On the contrary, such fragments as are not broke severed from their *periosteum*, shall be smoothed and set in order with your fingers, as is fitting. things shall be done according as art and necessity shall perswade and require.

The description of the hip.

The signes. The cure.

## CHAP. XVII. *Of a fracture of the shoulder, or arm bone.*

THe Arm bone is round, hollow, full of marrow, rising up with an indifferent neck, ar on the upper part into somewhat a thick head. On the lower part it hath two processe before, the other behinde; between which there is (as it were) an half circle, or the c pulley, each end whereof leads into its cavity, of which one is interior, another exte by these (as it were) hollow stops, the bending and extension of the arm might be limited, le

bone of the cubit, if the circle ſhould have been perfect, ſliding equally this way and that way, might, by its turning, have gone quite round, as a rope runs in a pulley; which thing would much have confuſed the motion of the cubit. For ſo the extenſion, or bending it back, would have been equall to the neceſſary bending it inwards. It is very expedient that a Surgeon know theſe things, that ſo he may the better know how to reſtore the fractures and luxations of this part. If one of the fragments of this broken bone ſhall lye much over the other, and the Patient have a good ſtrong body, then the arm ſhall be much extended, the Patient being ſo ſet upon a low ſeat, that he may not riſe, when the fracture ſhall be a ſetting, and ſo hinder the begun work; and alſo, that ſo the Surgeon may the more eaſily perform his operation upon the Patient ſeated under him; yet *Hippocrates* regarding another thing, would have the Patient to ſit higher. But you muſt have a care that the ſhoulderbone it ſelf be drawn directly downwards, and the cubit ſo bended as when you put it into a ſcarf. For if any one ſet this bone, lifting the arm upwards, or otherwiſe extending it, then muſt it be kept in that poſture; for otherwiſe, if the figure be changed, the ſetting will quickly be ſpoiled, when as you come to put the arm in a ſcarf. Wherefore the Surgeon muſt diligently and carefully obſerve that in ſetting a broken arm, he put it in ſuch a poſture, that reſting on the breaſt, it look down towards the girdle. You muſt have a care in laying the ſplints, and rowling your ligatures, that they hurt not, nor preſs too hard upon the joints. For, in the opinion of *Hippocrates*, by the preſſure of parts which are nervous, fleſhleſs, and conſequently endued with exquiſite ſenſe, by the ſplints there is danger of moſt grievous pain, inflammation, denudation both of the bone and nerve; but chiefly, if ſuch compreſſion hurt the inner part, towards which the arm is bended; wherefore the ſplints made for this place muſt be the ſhorter. Therefore after the arm-bone is ſet, the arm ſhall be laid upon the breaſt in a right angle, and there bound up in a ſcarf, leſt that the Patient, when he hath need to ſtir, ſpoil and undo the ſetting, and figure of the broken bone. But the arm muſt be kept in quiet, untill ſuch time as the fragments ſhall be confirmed with a *Callus*, which uſually is in forty dayes, ſooner or later, according to the different conſtitutions of bodies.

The cure.

How the arm muſt be placed when the bone is ſet.

*Sect. 3. offic. ſect. 1. de fract.*

In what time it will knit.

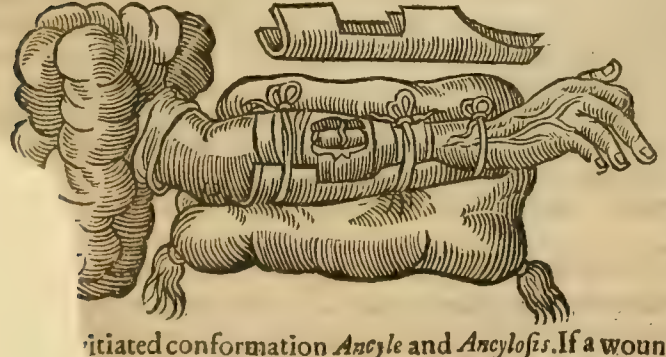
## CHAP. XVIII. *Of the fracture of the Cubit, or the Ell and Wand.*

The differences.

IT ſometimes happeneth, that the cubit and wand are broken together and at once, and otherwhiles that but the one of them is fractured. Now they are broken either in their midſt or ends; their ends (I ſay) which are either towards the elbow, or elſe towards the wriſt. That fracture is worſt of all, wherein both the bones are broken, for then the member is made wholly impotent to perform any ſort of action, and the cure is alſo more difficult; for the member cannot ſo eaſily be contained in its ſtate: for that bone which remains whole, ſerves for a ſtay to the arm, and hinders the muſcles from being drawn back, which uſually draw back and ſhrink up themſelves, whenſoever both bones are broken. Hence it is, that that fracture is judged the worſt, wherein the cubit or ell bone is broken. But that is eaſieſt of all, wherein only the wand is broken, for ſo the fractured part is ſuſtained by the ell bone: when both the bones are broken, there muſt be made a ſtronger extenſion, for that the muſcles are the more contracted. Therefore, whenſoever either of them remains whole, it doth more ſervice in ſuſtaining the other, then any either ligatures or ſplints, for that it keeps the muſcles right in their places. Wherefore, after the bones ſhall be ſet and rowled up with ligatures and ſplints, the arm muſt be ſo carryed up in a ſcarf put about the neck, that the hand may not be much higher than the elbow, leſt the blood and other humours may fall down thereinto. But the hand ſhall be ſet in that poſture which is between prone and ſupine, for ſo the wand ſhall lye directly under the ell, as we have read it obſerved by *Hippocrates*. The reaſon is, for that by a ſupine figure or ſituation, both the bone and muſcles are perverted: for firſt, for the bone, the *Apophyſis, ſtyloides* and *Olecranum* of the cubit, ought to be in an equall plain, and to be ſeated each againſt other; which is not ſo in a ſupine figure, as wherein the *Proceſſus ſtyloides* of the cubit is ſet againſt the inner proceſs of the arm bone. But in muſcles, for that, like as the inſertion and ſite of the head of a muſcle is, ſuch alſo is the ſite of the belly thereof, and laſtly, ſuch the inſertion of the tail thereof; but by a ſupine figure, the muſcles ariſing from the inner proceſs of the arm bone and bending the cubit, ſhall have the tail placed in an higher and more exteriour ſite. In the *interim*, you muſt not omit, but that the Patients arm may, with as little pain as poſſible you can, be bended and extended now and then, leſt by the too long reſt of the tyed up part, and the intermiſſion of its proper function, the bones of the joint may be ſowdred together by the interpoſition, and as it were glue of the defluxion which fals abundantly into the joint of the elbow, and neighbouring parts, whence the ſtifneſs and unmoveableneſs thereof, as if there were a *Callus* grown there: from whence it may happen that the arm thereafter may neither be bended, nor extended, which I have obſerved to have happened to many. Whereof alſo *Galen* makes mention, and cals this

Sent. 3 ſect. 1. de fract.

*The figure of a fractured arm, with a wound bound up, and ſeated, as is fit.*



itiated conformation *Ancyle* and *Ancyloſis*. If a wound alſo aſſociate a fracture of the arm, then ſee put about it plates of Latin, or Paſt-bord, and make a convenient ligature, and that the frag- the bones be kept in the ſame ſtate wherein they were ſet and reſtored. Moreover, let him lay his a ſoft pillow, or cuſhion, as the precedent figure ſhewes you.

CHAP.

## CHAP. XIX. *Of the fracture of a Hand.*

THe bones of the Wrist, and After-wrist, may be broken: but, in *Hippocrates* opinion, chiefly by that kind of fracture which is called a *Sedes*; now if they shall happen to be broken, this shall be the manner of restoring them. Let the Patient lay forth his hand upon some even and smooth table, then let your servant stretch forth the broken bones, and the workmaster restore them thus extended, and put them in their proper seats. But being restored, they must be kept in their places by such remedies as are used in other fractures; to wit, cerates, compresses, linnen cloths, and splints. Now the fractured fingers shall be tyed or bound to their neighbours, that so they may the more easily, as bound to a stake, be kept in that state wherein they have been put by the hand of the Workman. But these bones, seeing they are of a rare and spongie nature, are in a short time and easily strengthened, or knit by a *Callus*. These things being done, the hollowness or palm of the hand shall be filled with a Tennis ball, for thus the broken bones shall not only be more easily kept in their places, but also the fingers themselves shall be kept in a middle posture, that is, not wholly open, nor quite shut. If they be kept in any other figure, the ensuing *Callus* will either deprave or quite abolish that action of the hand, whereby we take hold of any thing. The case stands otherwise with the fractured Toes; for they shall be kept streight and even out, lest they should hinder our going or standing.

*Sect. 2. de fract. sent. 9.*

The cure.

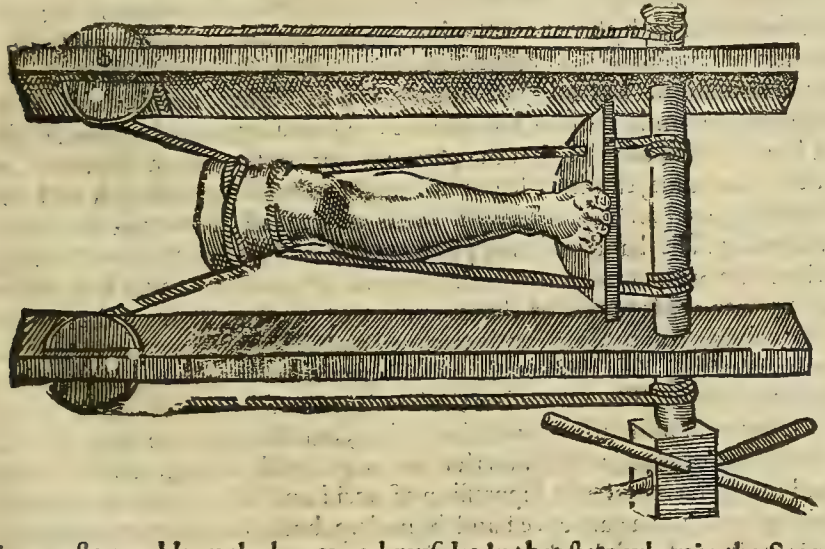
To what purpose the carrying of a ball in a fractured hand serves.

## CHAP. XX. *Of the fracture of the Thigh.*

IT is a hard thing to bring the fragments of the broken thigh together to be set, by reason of the large and strong muscles of that part, which whilest they are drawn back towards their originall, by a motion both naturall and convulsive, they carry together with them the fragment of the bone, whereinto they are inserted. Therefore, when as the fracture of this bone shall be restored, the Patient must lye upon his back with his leg stretched forth, and the Surgeon must strongly and with great force extend the thigh; but if he alone shall not be able sufficiently to extend it, he shall imploy two other strong attendants, by whose joint-help the fragments may be fitted and set each against other. For this purpose, when as the strength of the hand was not sufficient, the Ancients used an Instrument, called a *Glossocomium*, whereof this is the figure.

Why the bone of the thigh is more difficultly set.

*The figure of a* Glossocomium, *or Extender.*



In stead of this *Glossocomium*, you may make use of my Pulley; for *Hippocrates* in this bone when it is broken, doth approve of extension so great, that although by the greatness of the extension the ends of the fragments be somewhat distant asunder, an empty space being left between; yet notwithstanding would he have ligature made. For it is not here as it is in the extensions of other bones, whereas the casting about of Ligatures keeps the muscles unmoveable: but here, in the extended thighs, the deligation is not of such force, as that it may stay and keep the bones and muscles in that state, wherein the Surgeon hath placed them. For, seeing that the muscles of the thigh are large and strong, they overcome the ligation, and are not kept under by it. The Surgeon, in setting it, shall also consider, that the thigh-bone is hollowed on the inner side, but gibbous on the outside, therefore it must be set in its native figure. Otherwise, if any, unmindfull of this consideration, would have it streight, he shall make his Patient halt all his life after: wherefore this inner and native hollowness must be filled up and preserved by putting in a compresse or boulster spread over with *unguentum rosatum*, or the like glutinous thing that it may not fall off: for thus also the ligation shall the more faithfully keep the fragments of the bone in their places. Moreover, Compresses shall be applyed to the more slender and less protuberating parts of the thigh, as those which are next the ham and knee, that so the whole ligation may be alike, and consequently the more firm. Now ligatures, as we formerly noted, are ordained for three things. The first is, that the bones may be kept in that state wherein they were set, untill they be strengthened by a *Callus*. The second is, to hinder defluxion, which easily fals into the broken and luxated parts, both by reason of pain, as also by weakness. The third is, to stay and hold fast the splints and medicins which are applyed. Inflammation is hindred by repressing and hindring the blood and other humors, ready to flow down, from entring into the part, and by pressing those humors, which are preternaturally contained in the part, into the neighbouring parts above & below. Wherefore there must no small care be had of preparing ligatures, to wit, that they be made of choice and well woven cloth, yet not course or rough; and let them be of such length and breadth, as the Surgeon, perswaded by an artificiall conjecture, shall judge to be fit for the thickness and length of the member, and greatness of the fracture: for ligatures ought to be of breadth to involve and cover all the fractured part, & a great part of that which is sound. But seeing that in my Book of Bandages, I have seemed

*Sect. 67. & 68. sect. 2. de fract.*

The naturall and internall crookedness must be preserved in setting the bone.

The part to be bound up, must be made plain either by nature or art.

med chiefly to ſet down and approve the manner of binding uſed by *Hippocrates*, now I thing good here in this place to deſcribe that which is in common uſe amongſt our Surgeons. Our Surgeons therefore at this day require three Ligatures for fractures, the firſt whereof they preſently caſt upon the hurt part, whether broken or diſlocated, or only ſtrained, making the firſt wrappings upon it; ſo that they moſt and ſtraitlieſt bind it there, but leſſe and more looſly on both ſides thereof. Such circumvolutions, or wrappings, are drawn upwards, and there ended. They muſt be rowled thick, and not wide; for ſo if they preſently follow, and lye one upon another, they will hold the bones more firmly, and more far and wide preſſe forth and repreſſe the ſuperfluous blood from the ſound part. They preſently in like ſort caſt the ſecond ligature upon the very fracture, giving it two wraps, then going downwards; yet ſo, as that they are opener or wider, and farther diſtant each from other, and not ſo cloſe together, as the circumvolutions of the firſt ligature; that ſo they may preſs the humors the leſſe to the extremities of the part, as thoſe which cannot receive and bear, without inflammation and danger of a gangrene, ſuch abundance of humors, for that they are not ſufficiently ſpatious; as alſo more remote from the fountain of native heat, which is greater in the center than in the circumference. At the lower end of the hurt part the circumvolutions either end, or elſe are twined thence back again. They caſt on the third ligature in that lower end of the hurt part, and rowl it ſmoothly and gently upwards, the windings being made contrary to the windings of the firſt and ſecond ligatures; that they may ſo draw back into their naturall ſtate the muſcles, which peradventure have been drawn aſide by the force of the former wrappings. Theſe ligations finiſhed, they apply three ſplints of paſt-bord, or ſome ſuch matter; the firſt below the fracture, and that truely more broad, and of ſufficient length; and then two others, one on each ſide, diſtant each from other ſome fingers breadth, to the end to keep the bone that it do not ſtir to this ſide or that, being wrapped about with Tow or Cotton. Then they think of placing or laying the part, to which purpoſe they propound to themſelves three ſcopes. The firſt is, that the part may lye ſoft; the ſecond, ſmooth, or even; the third, ſomewhat high. The hurt part ought truely to lye ſoft, for that hard lying preſſes it, and cauſes pain and inflammation; which whiles the Patient cannot patiently endure, he is forced to change his place, whilſt he every way ſeeks eaſe for his pain: and thus he now and then moves the fractured part, which ought to be kept quiet without any motion. It muſt lye ſmooth or even, becauſe an unequall or uneven ſite diſtorts or draws awry the part, whilſt one portion of the hurt part is born up, and ſuſtained by that which lyes under it; but the other hanging down hath nothing thereunder, whereupon it may reſt. Therefore *Hippocrates* bids us diligently to take heed that the heel do not hang down, nor the foot remain without a pillow, for hence pain and a troubleſome defluxion of humors is to be feared. But the part ought to lye ſomewhat high, that the defluxion may be hindred, which is eaſily ſtirred up by a prone and declining ſite: for if the foot ſhal be placed in a lower figure, the blood which flowes thither from the leg, will cauſe inflammation. But on the contrary, if it be higher, nothing can flow down thereinto. Therefore abſolutely not only the foot, but alſo the thigh and leg, are to be placed higher than the reſt of the body: yet keeping ſuch a mean, that the part may not be too much diſtended, as *Hippocrates* admoniſheth us. In the mean time, this hurt leg or ſide, ought to be of equall length with the ſound, and for that purpoſe it muſt be ſtayed on both ſides with Junks, as we ſhall ſhew you hereafter, when we come to ſpeak of a broken leg. The bandage being performed as we have ſaid, the following night, and the next day the Patient feels the member more ſtraitly bound, than when it was firſt wrapped; yea, verily the knee is lifted up into a ſoft tumor by the expreſſion of the humor from the wounded part: but on the contrary, the enſuing day the ligation is ſlackned and relaxed, ſome portion of the humor contained in the part being digeſted. Alſo the next day all things are perceived more looſe, there being made a larger reſolution of the humor. Then therefore the bandages muſt be looſed, and that not only, leſt that the fragments of the bones ſhould fall forth of their place, but alſo that we may gratifie the Patient by that alteration or change of place, and beſides that we may avoid itching, which uſually happens to parts too long bound up, by reaſon of the ſuppreſſion of acrid and fuliginous excrements, which uſe to be gathered in great quantity in a part at reſt and bound up, both from the excrementitious humors, wherewith the part is moiſtened, and the alimentary humors, in a part which is idle and at quiet; by reaſon the diffliation and tranſpiration are hindred by want of exerciſe, and the pores of the skin ſhut up by the abundance of the ligatures: ſo that by the ſuppreſſion thereof, many have not only an itching, but alſo the skin being broke by the acrimony of theſe, as well vapours as humors, which are kept ſhut and pent up, have ulcers break forth. Therefore when ſuch accidents ſhall be feared, the part ſhall ſo long be fomented with warm water and oil, as you ſhall think fit: for, ſuch fomenting aſſwageth pain, relaxeth that which was too much ſtraitned by the binding, and amends the refrigeration of the part, cauſed by the repercuſſion and expreſſion of the blood and ſpirits, the native and internall heat being by this means revived. If, together with the tumor, there be a contuſion and fugillation, it muſt be the longer fomented, that the excrementitious humor reſiding in the part may be digeſted. But if this quantity of time ſhall not ſuffice, then muſt you uſe ſtronger digeſtives: yet have a care you uſe them not too long; for ſo you ſhould hinder the generation of a *Callus*. Therefore that ſaying of *Hippocrates* muſt here be remembred, which ſaith, That a weak fomentation, and the ſhort time of uſing one doth attract, but not diſcuſſe; but a longer and ſtronger waſts the fleſh. Beſides alſo, you muſt have regard to the temper and habit of the Patient; for fomentations, uſed to plethorick bodies, draw ſuperfluous humors to the part. The Ancients bid, that the ligatures be looſed every third day untill their ſeventh day; but after the ſeventh, on every ſeventh day: but hereof nothing can be certainly and perpetually decreed. For, according to the accidents the patients muſt be dreſſed ſooner or later, more often or ſeldome; renuing the ligatures, and the reſt of the dreſſing. Therefore, if no ſymptome urge, I would have none of theſe things, which are done to the Patient at the firſt dreſſing, to be moved, unleſſe as ſlowly and ſeldome as you may: For you hinder the knitting of the bone, if you never ſo little move the ends of the fragments thereof:

for,

The manner of binding uſed by Surgeons at this day.

VVhy the windings of the upper ligatures muſt be thicker and ſtraiter than the lower.

VVhy the third ligature muſt be rowled contrary to the two firſt.

The Surgeon muſt be mindfull of three things in placing the member.

*Sect. 2. de fract.*

*Sent. 33. & 56. ſect. 2. de fract.*

When the firſt ligation muſt be looſed.

*Sent. 15. ſect. 3. de offic.*

for, as you see wood is joined together by glue, and pewter with sowder; so the fragments of bones are, by a providence of nature, glued and sowdred together by a *Callus*. Wherefore broken bones have very much need of rest, to the generating of a *Callus*; otherwise, the matter thereof flowing down, quickly flowes away, and nothing is done. You may much help forwards the generation of a *Callus*, which is begun about the thirteenth or fifteenth day, by applying an emplaister made with the white of an eg, having the powder of red rose leaves, and wheat flour mixed therewith, and other catagmatick plaisters, which shall hereafter be described in speaking of the fracture of a leg.

Rest necessary for the knitting of set bones.

## CHAP. XXI. *Of the fracture of the Thigh nigh to the joint, or the upper or lower head of the bone.*

A Fracture sometimes happens at the joint of the hip in the neck of the thigh bone, as I once observed in an honest matron. I being called to her, when I had observed the hurt thigh to be shorter than the whole, with the outward prominency of the *Ischium*, which at the first sight I supposed to proceed from the head of the thigh bone, I presently perswaded my self it was a dislocation and no fracture; I then therefore extended the bone, and forced (as I thought) the head thereof into its cavity. The equality of both the legs in bigness which followed upon this extension, encreased my perswasion that it was a dislocation. The next day I visited her the second time, and found her in great pain, her hurt leg the shorter, and her foot wrested inwards. Then I loosed all her ligatures, and perceived such a prominency as I did formerly. Wherefore I endeavoured again to force in the head of the bone, as I formerly did. But as I was busied therein, I heard a little crackling, and also I considered, that there was no cavity nor depression in the joint, by which signs I certainly perswaded my self, that the bone was broken; and not dislocated. Neither only such kind of fractures, but also the separation of the *appendix* or head of this bone from its place, may induce one to think it a dislocation; which thing hath sometimes deceived some heedless Surgeons, who have not dreamt of the divulsion or separation of the *appendix* from the top of the thigh bone, but have judged it only a dislocation. Then therefore (that I may return to my former narration) I set the bone, and joined the fragments together, laid thereupon splints with compresses, made ligations with a rowler, having two heads wrapped about the joint, and the body cross-wise, and I defended her foot with a case, that none of the cloths might press it. I fastned a rope to a post, and so let it come down into the midst of the bed, and tyed many knots thereon, for the better taking hold and lifting up her self; the which thing you must alwayes do in fractures and dislocations of the thigh and leg, that so your Patients may have some stay, whereby they may succour themselves with their hands, as oft as they desire to rise, or lift themselves up in their beds, or go to stool; as also, that they may give perspiration, and as it were ventilation to the loins, buttocks, rump, and other parts, compressed and wearied with long lying, for want whereof they are molested with heat and pain, whence ulcers arise, which oft-times torment the Patient with such tormenting heat and pain, that he is even consumed by a feaver, watchings, and want of rest. This opportunity of raising the body out of the bed, is by so much the more needfull in this place, by how much the fracture is nearer the joint; for there it is more dangerous than in the midst of the thigh, and consequently more difficult to dress and heal, for that the part is bloodless, and by reason of the multitude of the nerves, tendons and ligaments, which are obnoxious to many malign symptomes. But the Surgeon must have diligent care in this kind of fracture, and must look often that the bone, which is set, do not fall forth again, which easily happens here by any light stirring of the body, and the like occasion, for that the thigh hath but one only bone. Therefore, as oft as the Bandages shall be loosed, and the fracture dressed, he shall attentively view the figure of the bone, and the magnitude of the affected part, comparing it with the sound; for the set and composed fragments of the broken bone, can scarce fall asunder, but that the one must lye upon the other. But before it be knit, the part must be extended and restored to its state, that so the Patient may not halt during the residue of his life. For I have read it written in *Avicen*, that scarce any do so well recover a fractured thigh, that they do not halt thereof; therefore the Patient must be carefull, that he move himself, or his body as little as he can. Many of the Ancients have set downe the time of the consolidation of this bone to be fifty dayes: but (as I formerly said) there can be no certain or determinate time hereof. But in what time soever this bone shall be knit, the Patient must not stand or go thereon presently upon it; for that there remains a weakness in the part a long time after, so that the Patients are forced to use crutches to go withall, in the mean space while they recover more strength.

A History.

Another fracture of the thigh, resembling a luxation.

Why the fracture of a bone near a joint is more dangerous.

*Lib. 3. sent. 6. tract. 1. c. 14.*

In what space the thigh bone may be knit.

## CHAP. XXII. *Of the fracture of the* Patella, *or whirle bone of the knee.*

THe whirl bone of the knee is oft-times contused, but not so frequently broken; yet when that happens, it goes into two or three pieces, sometimes long-wise, sometimes athwart. Sometimes it is broken in the midst, and some whiles shivered into many splinters, and all these either with, or without a wound. The signs are, impotency in going, a hollowness in that place, and a sensible separation of the fragments of the hurt part, and the crackling of these parts under your hand. It is set after this manner; wish the Patient to stretch forth his leg, yea, he must keep it extended all the while, untill it be knit; and therefore lest he should bend it unawares, the hollowness of the ham shall be filled with a boulster; for by bending of the knee, the set fragments of the whirl-bone would again fly in sunder. This being done, the fragments shall by the hand of the Surgeon be set as is fitting, and be kept so set by the application of convenient remedies, making ligatures, and applying junks, as we said must be done in the fracture of the thigh bone. And lastly, you must observe and do in this as in the fracture of a leg. For the prognostick this I affirm, that I have seen none of those who have had this bone fractured, who have not halted during the rest of their lives. The cause hereof is, the knit-

The Differences.

Signs.

Cure.

Why those halt who have had this bone fractured.

ting by the concretion of a *Callus* hinders the free bending of the knee; going, especially on even ground, is more easie to the Patient, but an ascent is far more difficult, and absolutely painfull. The Patient must necessarily for this kinde of fracture lye or keep his bed, at the least for forty dayes.

## CHAP. XXIII. *Of a broken leg.*

Sent. 65. sect. 2. de fract.

THis kind of fracture is cured after the same manner as that of the arm or cubit. *Hippocrates* admoniseth us, that the *Tibia*, or leg bone is more dangerous to be broken, and more difficult and slow to be healed than the *Fibula*, or shin bone; because that is the thicker, and as it were the upholder of the whole bulke of the body; but this other is but as it were a certain additament or assistant, provided for the staying or bearing up of the muscles of the leg, by which the foot is moved. The leg bone being only broken, the signs thereof are perceived only in the inner part of the leg; for that the shin bone being whole, suffers it not to throw or cast forth it selfe. On the contrary, when the shin bone only is broken, the signs thereof appear only in the externall part of the leg; because the leg bone, being opposed thereto, doth not suffer it to cast in its self, and with its fragments to turn inwards. But when both the bones are broken, the signs of the fracture may equally appear both here and there. But when only one of these bones are broken, the fracture is far more easie to dresse and heal, because that which remains whole, is a much more firm stay to that which is hurt, than any splints can be. But that I may the better instruct and make ready the Surgeon for the restoring of this fracture, I will illustrate the matter by an example from my self. *John Nestor*, Doctor of Physick, *Richard Hubert*, and I, went together to visit a Patient at the place of the Frier Minorites. Wherefore intending to pass over the Sein within sight of the place, I endeavoured to make my horse take boat, and therefore switched him over the buttocks. The Jade, madded herewith, so struck at me with his heels, that he brake both the bones of my left leg, some four fingers breadth above my ancle. Then I, fearing some worse mischief, and lest the Jade should double his blow, flew back; and as I fled back, the broken bones flew in sunder; and breaking through the flesh, stocking, and boot, shewed themselves, whereby I felt as much pain, as it is credible a man was able to endure. Wherefore I was presently carried into the boat, that so I might be carryed to the other side of the water to be dressed; but the stirring of the boat as they rowed, almost killed me with bitternes of pain, for that the sharp fragments of the bones were rubbed against the flesh which lay next them. Being ferried over, as I was conveyed into the next houses, my pain was much increased, whilest lifted by the hands of divers persons, one while up, another down, sometimes to the left side, other whiles to the right with my whole body, and all the parts thereof. When at the length I was laid upon a bed, I was somewhat freed from the bitternes of my pain, and had time to wipe off the sweat, which ran down over all my body. Then was I dressed with such a medicine, as the time and place would afford, we composed it of the white of an egge, wheat flour, soot of a chimny, and melted butter. For the rest, I entreated *Richard Hubert*, that he would handle me, as if he knew me not, neither that, moved for love of me, he should remit any thing of the severity of art, but chiefly, that he would stretch my foot straight out, and if the wound were not sufficiently wide, that he would enlarge it with his incision knife, that so he might the more easily set the broken bones in their due place; that he would with his fingers (whose judgment is far more certain than the best made instruments) search, whether the splinters which were in the wound were quite severed from the bone, and therefore to be taken forth; that he would with his hand press forth the blood, and the clods of blood which were in a great quantity concrete at the mouth of the wound; that he would bind up and place my leg in that site and manner, as he thought best; which is, that he should have three rowlers in a readines, the first whereof he should cast directly upon the wound, so that he should begin his ligation at the wound: also he should put splints about it; some three, but others two fingers bredth, of the length of half a foot, somewhat depressed and hollowed, whereby they might be the more easily put about the leg, more straitly at their ends, and a fingers distance each from other, which at the last he should bind with fillets, like those wherewith women use to bind up their hair; yet so that the binding might be more strait upon the wound: and that he would fill the cavity of the ham, and of the ancles with boulsters made of flaxe wrapped in linnen clothes: that he would fortifie the sides of my leg with Junks made of bents or little sticks, and lined with linnen cloth, stretched from my heel to my groin, and bound over in four places; so that the strait figure of the leg might scarcely be perverted by any force: that he would gently, and smoothly, lift up my leg to an indifferent height: and lastly, that he should arm it from the violence of externall injuries, by putting it in a box or case. But you must note, that the fit placing or laying of the leg is a matter of such moment, that if any error be here committed, it will cause no less than lameness. For if it be lifted up higher than is fit, the *Callus* will be hollow on the foreside; if lower, then it will be gibbous or bunching forth. Neither also do they commit a small error, who do not fill up the cavities at the ancles after the aforementioned manner: for, hereupon the heel will be much afflicted, whilest it is forced to sustain a tedious and painfull compression, which at length brings a hot distemper, because the spirits cannot freely flow thereto; which I finding by experience, not knowing the cause, wished them ever now and then to lift up my heel, whereby it might enjoy the benefit of perspiration, and the spirits have free entrance thereinto, and

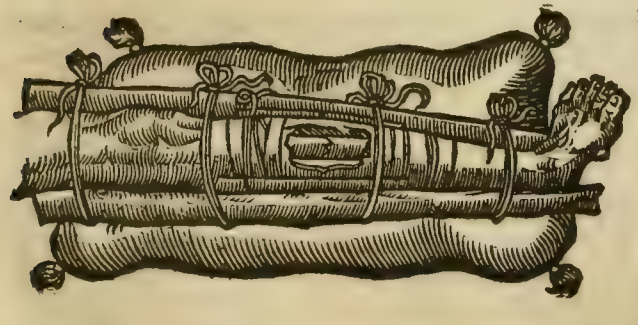
Signs that both the bones are broken.

A History.

A soone made medicine.

What to do when the leg is broken.

*The figure of a Leg fractured with a wound, and bound up.*



and the contained vapours passing forth. To conclude, my hurt leg was laid upon a cushion after the manner you see described in the page precedent.

## CHAP. XXIV. *Of some things to be observed in ligation, when a fracture is associated with a wound.*

THis, taken out of the doctrine of the Ancients, ought to be kept firm and ratified; that ligation must be made upon the wound; otherwise the wounded part will presently lift it self up into a great tumor, receiving the humors pressed thither by the force of the ligation made on this & that side, above and below, whence ensue many malign symptoms. You may make tryall hereof upon a sound fleshy part; for if you bind it above and below, not touching that which is in the midst, it will be lifted up into a great tumor, and change the flourishing and native colour, into a livid or blackish hue, by reason of the flowing and abundance of the humors pressed forth on every side from the neighbouring parts. Therefore such things will happen much the rather in a wounded or ulcerated part. But for this cause, the ulcer will remain unsuppurated and weeping, crude and liquid *sanies* flowing there-hence, like unto that which usually flowes from inflamed eyes. Such *sanies*, if it fall upon the bones, and make any stay there, it, with the touch thereof, burns and corrupts them, and so much the more, if they be rare and soft. These will be the signs of such corruption of the bones; if a greater quantity, and that more filthy *sanies*, flow from the ulcer, than was accustomed, or the nature of a simple ulcer requires; if the lips of the ulcer be inverted; if the flesh be more soft and flaccid about them; if a sorrowfull sense of a beating, and also deep pain torment the Patient by fits; if, by searching with your probe, you perceive the bone to be spoiled of its *periosteum*; and lastly, if you find it scaly and rough; or also if your probe be put down somewhat hard, it run into the substance of the bone. But we have treated sufficiently hereof in our particular Treatise of the rottenness of the bones. But certainly such rottenness will never happen to the bone, if the hurt part be bound up, as is fit, and according to art. Wherefore I judge it not amiss, again to admonish the Surgeon of this, that as far as the thing shall suffer, he make his rowlings upon the wound; unless by chance there be such excessive pain and great inflammation, that, through occasion of such symptomes and accidents, he be diverted from this proper and legitimate cure of the disease. Therefore then, because nothing more can be done, let him only do this, which may be done without offence; that is, let him supply the defect of ligation and rowlers, with a linnen cloth, not too weak, nor too much worn, being twice or thrice doubled, and which may serve to compass the wound and neighbouring parts once about: let him sew the edges thereof at the sides of the wound, lest he be forced to stir the fragments of the bones (which once set ought to be kept unmoved) as often as the wound comes to be dressed. For, broken bones do not require such frequent dressing, as wounds and ulcers do. By this it appears, that as want of binding, and too much loosness in absence of pain and a phlegmon, so also too strait ligation, when pain is present, brings a phlegmon and abscess to the wound. Therefore let all things here, according to the forementioned rules and circumstances, be indifferent. I have for this purpose thought good to reiterate these things, because you shall as yet find many, who follow the practise of *Paulus*, and make many circumvolutions here and there, above and below the wound, which presently they carry cross-wise. But this cross or lattice-like kind of ligation is wholly to be disliked, and that only to be used which we have described, according to the mind of *Hippocrates*. Now it is time that I returne to the former history of my mishap, and declare what was done to me after that first dressing, which I have formerly mentioned.

That the ligation must be most strait upon the wound.

What symptomes ensue the want of binding upon the wounded part.

Signs of the corruption of the bones.

When the wounded part must be omitted in ligation.

Lattice-like binding to be shunned.

## CHAP. XXV. *What was used to the Authors leg after the first dressing.*

BEing brought home to mine own house in *Paris* in the afternoone, they took from me, out of the Basilica of the left arm, some six ounces of blood. And then at the second dressing the lips or edges of the wound and places thereabout were annointed with *unguentum rosatum*, which by a joint consent of the Ancients, is much commended in the beginnings of fractures: for it will asswage pain, and hinder inflammation, by repelling the humors far from the wounded part: for it is cold, astringent and repelling, as the composition thereof shewes; for it is made *ex oleo omphacino, aqua rosacea, pauco aceto, & cera alba*. Therefore I used this ointment for six dayes; I dipped the compresses and rowlers somewhiles in oxycrate, otherwhiles in thick and astringent red wine, for the strengthening of the part, and repressing the humors; which two things we must have a care of in *Hippocrates* opinion, in fractures especially with a wound. Wherefore if at any time the compresses or rowlers seemed to dry, I now and then moistned them with the oxycrate, or rose vineger: for, by their too much drinesse, pain and inflammation happen; and if they bind the part somewhat more strait, they hurt it also by their hardness. You shall see many Surgeons, who in this kind of affect, from the beginning to the end, use only astringent and emplastick medicins, wholly contrary to the method set down by *Hippocrates*, and commended by *Galen*. For, by the continued use of such things, the pores, and breathing places of the skin are shut up; whence the fuliginous excrement being suppreſt, the externall heat is increased, and itching caused, and at length an ulcer by the fretting of the acrid and serous humour long suppreſt. Whereby you may learn, that astringent and emplastick medicins must not be used above six dayes. In stead hereof you shall use the emplaisters, which I shall presently describe. In the beginning of my disease I used to spare a diet, that for nine dayes I ate nothing each day, but twelve stewed prunes, and six morsels of bread, and dranke a *Paris* pint of sugred water, of which water this was the composition. ℞. *succ. albis.* ℥xij. *aquæ font.* ℔xij. *cinam.* ʒiij. *bulliant simul secundum artem*: Otherwhiles I used syrup of maidens-hair with boiled water: Otherwhiles, the divine drink (as they term it) whereof this is the composition. ℞. *aquæ coctæ* ℔vj. *succ. albis.* ℥iv. *succ. lim.* ʒj. *agitentur & transvasentur sæpius in vasis vitreis*. I was purged when need required with

*Unguentum rosatum*, wherefore good in fractures.

You must have a care that the compresses and rowlers grow not hard by drinesse.

The description of a sugred water.

with a boile of *Caſſia* with Rubarb. I uſed alſo ſuppoſitories of Caſtle ſoap to make me go to ſtoole; for, if at any time I wanted due evacuation, a preternaturall heat preſently ſeiſed upon my kidnies. With this, though exquiſite manner of diet, I could not prevail, but that a fever took me upon the eleventh day of my diſeaſe, and a defluxion, which turned into an abſceſs, long flowing with much matter. I think the occaſion hereof was ſome portion of the humor ſuppreſt in the bottome of the wound; as alſo by too looſe binding, by reaſon that I could not endure juſt or more ſtrait binding; and laſtly, ſcales or ſhivers of bones quite broke off, and therefore unapt to be agglutinated: for theſe therefore putrefying, drew by conſent the proper nouriſhment of the part into putrefaction, and by the putredinous heat thence ariſing, did plentifully adminiſter the materiall and efficient cauſe to the defluxion and inflammation. I was moved to think they were ſcales ſevered from their bone, by the thin and crude *ſanies* flowing from the wound, the much ſwoln ſides of the wound, and the more looſe and ſpongy fleſh thereabouts. To theſe cauſes, this alſo did accrew, one night amongſt the reſt, as I ſlept, the muſcles ſo contracted themſelves by a violent motion, that they drew my whole leg upwards; ſo that the bones, by the vehemency of the convulſion, were diſplaced, & preſſed the ſides of the wound; neither could they be perfectly compoſed or ſet, unleſs by a new extenſion and impulſion, which was much more painfull to me than the former. My feaver when it had laſted with me ſeven dayes, at length enjoyed a *criſis* and end, partly by the eruption of matter, and partly by ſweat, flowing from me in a plenteous manner.

The cauſes of a fever and abſceſs, enſuing upon a fracture.

Signs of ſcales ſevered from their bones.

## CHAP. XXVI. *What may be the cauſe of the convulſive twitching of broken members.*

VWhy the extream parts are cold when we ſleep.

THis contraction, and (as it were) convulſive twitching, uſually happens to fractured members in the time of ſleep. I think the cauſe thereof is, for that the native heat withdraws its ſelf while we ſleep, into the center of the body; whereby it commeth to paſs, that the extream parts grow cold. In the mean while, nature, by its accuſtomed providence, ſends ſpirits to the ſupply of the hurt part. But becauſe they are not received of the part evill affected and unapt thereto, they betake themſelves together, and ſuddenly, according to their wonted celerity, thither from whence they came, the muſcles follow their motion: with the muſcles, the bones, whereinto they are inſerted, are together drawn; whereby it comes to paſs, that they are againe diſplaced, and with great torment of pain, fall from their former ſeat. This contraction of the muſcles is towards their originall.

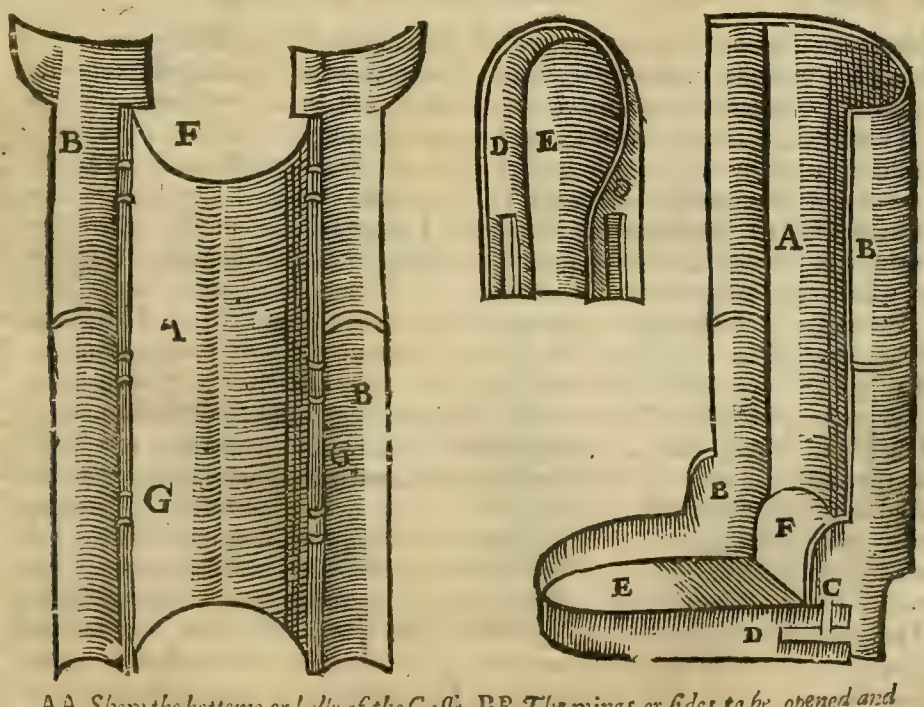
## CHAP. XXVII. *Certain documents concerning the parts, whereon the Patient muſt neceſſarily reſt, whileſt he lyes in his bed.*

The naturall faculties languiſh in the parts by idleneſs, but are ſtrengthened by action.

THoſe who have their leg or the like bone broken, becauſe they are hindered by the bitterneſs of pain, and alſo wiſh for their cure or conſolidation, are forced to keep themſelves without ſtirring, and upon their backs in their beds for a long time together. In the mean ſpace, the parts whereupon they muſt neceſſarily lye, as the heel, back, holy-bone, rump, the muſcles of the broken thigh or leg, remain ſtretched forth and unmovable, ſet at liberty from their uſual functions. Whereby it comes to paſs, that all their ſtrength decaies, and grows dull by little and little. Moreover alſo, by the ſuppreſſion of the fuliginous and acrid excrements, and want of perſpiration, they grow preternaturally hot; whence defluxion, an abſceſs and ulcer, happen to them, but principally to the holy bone, the rump, and heel: to the former, for that they are defended with ſmall ſtore of fleſh; to the latter, for that it is of more exquiſite ſenſe. Now the ulcers of theſe parts are difficultly healed, yea, and oft-times they cauſe a gangrene in the fleſh, and a rottenneſs and mortification in the bones there-under, and for the moſt part a continued feaver, *delirium*, convulſion, and (by that ſympathy which generally accompanies ſuch affects) a hicketing. For the heel and ſtomach are two very nervous parts, the latter in the whole body thereof, and by a large portion of the nerves of the ſixth conjugation; but the other by the great tendon paſſing under it, the which is produced by the meeting, and as it were growing together of the three muſcles of the calf of the leg. All which are deadly, both by diſſipation of the native heat by the feaverish, and that which is preternaturall; as alſo by the infection of the noble

How and what ulcers happen upon the fracture of the leg, to the rump and heel.

*The figure of a Caſſe.*




AA. *Shew the bottome or belly of the Caſſe.* BB. *The wings or ſides to be opened and ſhut at pleaſure.* C. *The end of the wings, whereto the ſole or arch is fitted.* DD. *The Arch.* EE. *The ſole.* FF. *An open ſpace, whereat the heel hangs forth of the Caſſe.*

noble parts, whose use the life cannot want, by carrion-like vapours. When as I considered all these things with my self, and (become more skilfull by the example of others) understood how dangerous they were, I wished them now and then to lift my heel up out of the bed; and taking hold of the rope which hung over my head, I heaved up my self, that so the parts, pressed with continuall lying, might transpire, and be ventilated. Moreover also I rested these parts upon a round cushion, being open in the middle, and stuffed with soft feathers, and laid under my rump and heel, that they might be refreshed by the benefit and gentle breathing of the air: and I did oft-times apply linnen clothes spred over with *unguentum rosatum*, for the asswaging of the pain and heat. Besides also, I devised a Case of Lattin, wherein the broken leg being laid, is kept in its place, far more surely and certainly than by any Junks; and moreover also, it may all be moved to and again at the Patients pleasure. This Cas will also hinder the heel from lying with all its body and weight upon the bed, putting a soft and thick boulster under the calf, in that place where the Cas is hollow: besides also, it arms and defends it against the falling down and weight of the bed clothes, having a little arch made over and above of the same matter. All which shall be made manifest unto you by the precedent figure. Now it remains, that I tell you what remedies I applyed to the abscess which happened upon my wound. When therefore I perceived an abscess to breed, I composed a suppurative medicin of the yolks of egs, common oil, turpentine, and a little wheat flour, and I used it untill it was opened; then to clense it I used this following remedy. ℞. *syrupi rosati & terebinth. venetæ, an.* ℥ij. *pulveris radicis ireos florentiæ, aloes, masticbes, farinæ hordei, an.* ℥ß. *incorporentur omnia simul & fiat mundificativum:* but I had a care, that the place, whereat I conjectured the quite severed scales of the bones must break forth, should be filled with tents made of sponge or flax, that so, by this means, I might keep the ulcer open at my pleasure. But I put into the bottome of the ulcer catagmatick and cephalick powders, with a little burnt alum, to procure the egress of the formerly mentioned scales. These at length cast forth, I cicatrized the ulcer with burnt alum. For, this having a drying and astringent faculty, confirms and hardens the flesh, which is loose and spongy, and flowing with liquid *sanies*, and helps forward natures endeavor in cicatrization. For, the fragments of the bones, they, by reason of their naturall drines and hardness, cannot be joined and knit together by themselves without a *medium*: but they need a certain substance, which, thickning and concreting at their ends, doth at length glue them together, and (as it were) fasten them with soder. This substance hath its matter of the proper substance and marrow of the bones; but the former from the native heat, and emplastick medicins, which moderately heat. For, on the contrary, these medicins, which, by their too much heat, do discuss and attenuate, do (as it were) melt and dissolve the matter of the *Callus*, and so hinder the knitting. Wherefore for this purpose, I would wish you to make use of the following emplasters, of whose efficacy I have had experience; for, hence they are called knitting or consolidating plaisters. ℞. *olei myrtill. & rosarum omphac. an.* ℔ ß. *rad. altheæ* ℔ ij. *rad. fraxini, & fol. ejusdem, rad. consolidæ majoris & fol. ejusdem fol. salicis, an.* m. j. *fiat decoctio in sufficienti quantitate vini nigri, & aquæ fabrorum, ad medietatis consumptionem, adde in colatura pulveris myrrhæ & thuris an.* ℥ß. *adipis hirci,* ℔ ß. *terebinth. lotæ* ℥iv. *masticbes* ℥iij. *litharg yri auri & argenti, an.* ℥ij. *boli armeniæ, & terræ sigillatæ, an.* ℥j. ß. *minii* ℥vj. *ceræ albæ quantum sufficit: fiat emplastrum, ut artis est.* In stead hereof you may use the black emplaister, whereof this is the description. ℞. *litharg yri auri* ℔ j. *olei & aceti* ℔ ij *coquantur simul lento igne donec nigrum & splendens reddatur emplastrum, & non adhæreat digitis.* Or else, ℞. *olei rosat. & myrtill. an.* ℥ij. *nucum cupressi, boli armen. sanguinis drac. pulveris atorum an.* ℥ß. *emplastri diachalcitheos* ℥iv. *liquefaciant simul, & fiat emplastrum secundum artem.* In defect of these, you may use a Cere-cloth, or *tela Gualteri*, whereof this is the description. ℞. *pulveris thuris, farinæ volatilis, masticbes, bolarm. resinæ pini, nucum cupressi, rubiæ tinctorum, an.* ℥ij. *sevi arietini & ceræ albæ an.* ℔ ß. *fiat emplastrum:* into which (whilest it is hot) dip a warm linnen cloth, for the forementioned use. *Emplastrum Diacalcitheos*, by the common consent of all the Ancients, is much commended for fractures; but it must undergo different preparations, according to the condition of the time; for in the summer it must be dissolved in the juice of plantain and night-shade, lest it should heat more than is fit. It is convenient, in the *interim*, to have regard to the temper of the affected bodies; for neither are the bodies of children to be so much dried as these of old men: otherwise if such drying medicins should be applyed to young bodies as to old, the matter of the *Callus* would be dissolved, it would be so far from concreting; wherefore the Surgeon must take great heed in the choice of his medicins. For, oftentimes remedies, good of themselves, are by use made not good, because they are used and applyed without judgement: which is the cause that oft-times pernicious accidents happen, or else the *Callus* becomes more soft, hard, slender, crooked, or lastly, concretes more slowly by the great error, and to the great shame of the Surgeon.

Remedies for the prevention of the foresaid ulcers.

The use of a Lattin Case.

A suppurative medicine.

A deterseive.

Catagmatick powders have power to cast forth the scales of bones.

The causes both efficient and materiall of a *Callus*.

Medicins conducing to the generation of a *Callus*.

The black plaister.

The Description of a *Sparadrapum*, or Cere-cloth.

Medicins good of themselves not good by event.

## CHAP. XXVIII. *By what means we may know the Callus is a breeding.*

THen I knew that my leg begun to knit, when as less matter than was usuall came from the ulcer, when the pain slackened, and lastly, when as the convulsive twitchings ceased; which caused me to judge it fit to dress it seldomer than I was used to do. For, by the frequent detersion in dressing an ulcer, whilest a *Callus* is breeding, the matters whereof it is to be made, are drawn away and spent, which are (as they term them) *Ros*, *Cambium*, and *Gluten*, which are the proper and genuine nourishments both of the bony, as also of the fleshy substance. I by other signs also conjectured the breeding of the *Callus*, to wit, by the sweating of a certain dewie blood out of the edges and pores of the wound, which gently dyed and bedewed the boulsters and ligatures, proceeding from the efflux of the subtler and gentler portion of that matter, which plenteously flowed down for the breeding of a *Callus*. As also, by a tickling and pleasing sense of a certain vapour, continually creeping, with a moderate and gentle heat, from the upper parts even to the place of the wound. Wherefore thence forwards I somewhat loosened the ligation, lest, by keeping it too strait, I should hinder from

When the *Callus* is breeding the ulcer must be seldome dresst.

*Hipp. sect.* 43. *sect.* 1. *de fract.*

entring to the fragments of the bones, the matter of the *Callus*, which is a portion of the blood, temperate in quality, and moderate in quantity. Then therefore I thought good, to use nourishments fit to generate more gross, thick and tenacious blood, and sufficient for generating a *Callus*; such as are the extremities, tendinous, and gristly parts of beasts, as the heads, feet, legs, and ears of Hogs, Oxen, Sheep, Kids; all which I boiled with rice, French barley, and the like, using somewhiles one, some whiles another, to please my stomach and palate. I also sometimes fed upon frumity, or wheat sodden in Capon broth with the yolks of egs; I drank red, thick and astringent wine, indifferently tempered with water. For my second course, I ate chesnuts and medlars: neither do I without some reason, thus particularize my diet: for that gross nourishments, especially if they be friable and fragil, as beef is, are alike hurtfull (for as much as pertains to the generating of a *Callus*) as light meats are For that makes the *Callus* too dry, these too tender. Wherefore *Galen* pronounces these meats only fit for generating a *Callus*, which are neither fragil, nor friable, neither serous and thin, nor too dry; but indifferent gross, and also viscid, fat and tough. These meats, digested by the stomach into *chylus*, are sent into the guts, and from hence, by the mesaraick veins, into the gate-vein, and the hollow part of the Liver, thence into the hollow vein, and so into the veins dispersed over all the body and the parts thereof. There are also some of these veins which carry blood into the bones; but in the large cavities of the bones is marrow contained, as in the small a certain marrowy substance, proportionable thereto, being their proper nourishment. The generation of marrow is from the grosser portion of the blood; which flowes into the greater cavities of the bones by larger veins and arteries, but into the less by lesser, which end in their pores and small passages. For, in large bones you may observe large and apparent passages, by which the veins and arteries enter for the forementioned use. By the same wayes the nerves also insinuate themselves, from whence proceeds a membrane which involves the marrow of the bones, the which by that means is endued with most exquisite sense, as experience teacheth; which is the cause that makes many beleeve, that the marrow hath sense of feeling, because the membranes thereof being hurt cause most bitter pain. Therefore out of the marrow and the proper substance of the bone, there sweats a certain gross and terrestriall juice, whereof, by the power of the assimilating faculty, which serves in stead of the formative, a *Callus* growes and knits. Simple fractures of the leg are usually knit in fifty daies; but through the occasion of the wound and the scales quite broke off, and other accidents which befell me, it was three whole months before the fragments of the bones were perfectly knit, and it was also another month, before I could go upon my leg without the help of a crutch. Going was painfull to me for some few dayes, because the *Callus* had taken up some place of the muscles: for, before my former freedome of motion could return again to the broken and knit part, it was necessary, that the tendons and membranes should separate themselves by little and little from the scar. In the performance of all these things, I had the diligent and faithfull assistance amongst the Surgeons, to omit Physitians, of *Anthony Portal* the Kings Surgeon.

Meats fit for generating a *Callus*

*Lib. 6. meth. cap. 5.*

Why the marrow may seem to have sense of feeling.

In what space the leg is usually knit.

## CHAP. XXIX. *Of those things which may hinder the generation of a* Callus, *and how to correct the faults thereof, if it be ill formed.*

HAving already spoken of the signs of a *Callus* beginning to concrete, of its generation and the manner thereof: it now remains, that we treat of those things which hinder the generation thereof; and what on the contrary help forwards the conformation and concretion thereof. Now these things which either wholly hinder, or else retard the generation of a *Callus*, have a strong and powerfull discussive and attenuating faculty; or else they are unctuous, oily, and moist. For by such, the juice, whereof the *Callus* ought to be, is either melted and consumed, or else growes soft, and is relaxed. But on the contrary, those things which help forwards a *Callus* must be drying, incrassating, thickening, hardning, and emplastick, moderately hot and astringent. But for moist and relaxing medicins, they ought to have no place here, unless when it happens that the *Callus* is ill formed, that is, too thick, or crooked, or otherwise ill shapen, whereby it may be wasted and broken, so to be restored again after a better manner. Yet notwithstanding, such things are not to be attempted, unless when the *Callus* is yet green, and so depraved, that the fault thereof doth very much pervert the native conformation of the part, and exceedingly offend the action. Then therefore in such a case, the place must be fomented with a decoction of a Sheeps head and guts, wherein shall be boiled the roots of Marshmallowes, of Briony, the seeds of Line, of Fænugreek, Pigeons dung, Bayberries, and the like. You shal also use this following ointment and plaister. ℞. *unguenti de Althæa* ℥iv. *olei liliorum, & axungiæ anseris an.* ℥j. *æque vitæ parum, liquefiant simul, fiat linimentum quo liniatur pars.* Then apply this following emplaister. ℞. *emplast. de Vigo cum mercurio, cerati œsypati descriptione Phylagrii, an.* ℥iij. *olei anethini & liliorum an.* ℥j. *liquefiant omnia simul, fiat emplastrum*; let it be spred upon leather for the aforesaid use. When by this means the *Callus* shall seem to be sufficiently mollified, it shall be broken, and the bones restored to their naturall state, and the cure of the fracture to be followed as at the beginning. If the *Callus* be become too hard through age, it is better not to break it, but to let it alone, lest some worse accident befall the Patient. For it may so fall out, that by your labouring to break it, the bone may break in some other part, before it break in that which is knit by the *Callus*. Therefore the discreet Patient had rather live lame, than for eschewing it, to undergo the hazzard of his life. If the *Callus* be too gross, it shall be diminished (if it be as yet fresh) with emollient, resolving, and powerfully astringent medicins, which have force to dissolve, dry and exhaust. It will also be good strongly to rub the *Callus* with oil of Bayes, wherein Salt-petre, or some other kind of Salt hath been dissolved, then wrapped about with a rowler to bind it very straitly, putting a leaden plate thereon, whereby the flowing down of the nourishing humor into the part, may be forbidden; that thus by little and little the *Callus* may decay and diminish. If on the contrary, it any wayes happen that the *Callus* be more thin and slender, and grows more slowly, for that it is too straitly

Discussing and unctuous medicins hinder the generation of a *Callus*.

What helps forward the generation thereof.

What *Callus* must not be broken, though distort, or otherwise ill conformed.

The causes of too slender a *Callus*

bound, or because the idle part is longer kept in quiet than is fit, without exercising of its proper function, (which cause is to be reckoned amongst the chief causes of the leanness, even for this reason, for that exercise stirs up the native heat of the part, the worker of digestion and nutrition) or else for that they feed upon such nourishments as offend in quality, or quantity, or both, or for that the ligature, used to the part, is too often loosed, or because the part its self is too hastily and before the time put to undergo solid offices and motions. According to the variety of causes, medicins shall be applyed. For if the ligature of the part be too strait, it shall be loosed, yea verily the fractured place, the ligature being taken away, shall be quite freed from ligation, and a new kind of ligature must be made, which must be rowled down from the root of the vessels, that is, from the armpits, if the arm; or from the groin, if the leg be broken, to the fracture; yet so, as that you may leave it untouched or taken in, for thus the bloud is pressed from the fountain and spring, and forced into the affected part, by a way quite contrary to that, whereby we have formerly taught, in fear of inflammation, to hinder it from entrance into the affected part. Also gentle frictions and fomentations with warm water may be profitably made, from which you must then desist when the part shall begin to grow hot and swell. If any too long continue these frictions and fomentations, he shall resolve that which he hath drawn thither. For this we have oftentimes observed, that frictions and fomentations have contrary effects, according to the shortness and continuance of time. Pications will also conduce to this purpose, and other things which customarily are used to members troubled with an *atrophia*, or want of nourishment.

Remedies therefore.

When we must desist from fomenting and frictions.

## CHAP. XXX. *Of fomentations which be used to broken bones.*

DIvers fomentations are used to broken bones for severall causes. When we use warm water for a fomentation, we mean that, which is just between hot and cold, that is, which feels lukewarm to the hand of the Physitian and Patient. A fomentation of such water used for some short space doth moderately heat, attenuate and prepare for resolution, the humor which is in the surface of the body, it draws blood and an alimentary humor to the part labouring of an *atrophia*; it asswages pain, relaxes that which is too much extended, and moderately heats the member refrigerated through occasion of too strait binding, or by any other means. On the contrary, too hot fomenting cools by accident, digesting and discussing the hot humor which was contained in the member. We mean a short time is spent in fomenting, when the part begins to grow red and swell, a just space, when the part is manifestly red and swoln; but we conjecture, that much or too much time is spent thereon, if the redness, which formerly appeared, go away, and the tumor, which lifted up the part, subside. Also in fomenting, you must have regard to the body whereto it is used. For if it be plethorick, an indifferent fomentation will distend the part with plenty of superfluous humors; but if it be lean and spare, it will make the part more fleshy and succulent. Now it remains, that we say somewhat of the fracture of the bones of the feet.

Warme water.

The effects thereof.

Notes of short, just, and too long fomenting.

Fomentations hurt plethorick bodies.

## CHAP. XXXI. *Of the fracture of the bones of the feet.*

THe bones of the instep, back and toes of the feet, may be fractured as the bones of the hands may. Wherefore these shall be cured like them, but that the bones of the toes must not be kept in a crooked posture, as the bones of the fingers must, lest their action should perish or be depraved. For as we use our legs to walk, so we use our feet to stand. Besides also the Patient shall keep his bed untill they be knit.

Why the fractured bones of the foot must be kept in a streight posture.

*The end of the fifteenth Book.*

# OF DISLOCATIONS, or LVXATIONS.

## THE SIXTEENTH BOOK.

## CHAP. I. *Of the kinds and manners of dislocations.*

A Dislocation is the departure or falling out of the head of a bone from its proper cavity, into an accustomed place besides nature, hindring voluntary motion. There is another kind of Luxation, which is caused by a violent distention, and as it were a certain divarication, and dilatation, or extension into length and bredth of the ligaments, and all the nervous bodies, which contain, strengthen, and bind together the joints. Thus those who have been tormented and racked, have that thick ligament which is in the inner cavity of the huckle bone too violently extended. Those who have suffered the Strappado, have the ligaments encompassing the articulation of the arm bone, with the shoulder blade, forcibly and violently distended. Such also is their affect, whose foot is strained by slipping. There is a third kinde of luxation, when as those bones which are joined contiguous, and one (as it were) bound to the sides of another, gape or fly asunder: as in the arm, when the ell parts from the wand; in the leg, when the one focile flyes from the other: yet this may be referred to the second sort of dislocations, because it happens not without dilatation;

What a Luxation properly so called is.

What a Luxation not properly so called is.

The third kind of dislocation.

The fourth. tion, or else the breaking of the ligaments. There is also a fourth added to these, as when the *Epiphyses* and heads of bones are plucked from the bone whereon they were placed or fastned: which unproperly called kind of Luxation, hath place chiefly in the bones of young people, and it is known by the impotency of the part, and by the noise and grating together of the crackling bones when they are handled. Now the bones of young folks are also incident to another casualty: for as the bones of old people are broken by violence by reason of their drinesse and hardnesse, thus the bones of children are bended or crooked in by reason of their naturall softnesse and humidity.

## CHAP. II. *Of the differences of Dislocations.*

What Luxations are simple. SOme Dislocations are simple, others compound. We term them simple which have no other preternaturall affect joined with them; and such compound, as are complicated with one or more preternaturall affects; as when a dislocation is associated with a wound, fracture, great pain, inflammation, and an abscesse. For, through occasion of these we are often compelled so long to let

What compound.

alone the luxation, until these be remitted of themselves, or by our art. Some Dislocations are complete and perfect, as when the bone wholly fals out of its cavity: other some are unperfect, as when it is only lightly

What a complete Luxation is.

moved, & not wholly fallen out; wherefore we only cal them subluxations or strains. Differences of Luxations are also drawn from the place: for sometimes the bone is wrested forwards, otherwhiles backwards,

What a subluxation or strain.

upwards, downwards; somewhiles it may be wrested, according to all these differences of site, and otherwhiles only according to some of them. Differences are also taken from the condition of the dislocated Joint in greatnesse and littlenes, from the superficiary or deep excavation of the *sinus* or hollownes; and lastly from the time, as if it be lately done, or of some long continuance. I have judged it fit to set down all these, for that there are severall indications of curing, according to the varietie of each of these, as we shall teach hereafter.

## CHAP. III. *Of the causes of Dislocations.*

Internall causes of dislocations. THere are three generall causes of Luxations, internall, externall, and hereditarie. The internall are excrementitious humors and flatulencies, which, setling into the joints with great force and plentie, do so make slippery, soften and relax the ligaments which bind together the bones, that they easily fal out of their cavities, or else they so fil & distend these ligaments, and make them so short, that being contracted, they also contract the *appendices* of the bones from whence they arise, and so pluck them from the bone whereon they are placed, or else draw the heads of the bones out of their cavities, chiefly if the violence of a noxious humor doth also concur, which possessing and filling up the cavities of the joints, puts them from their seats, as it oft-times happens to the joint of the hip by Sciaticies, and to the *Vertebræ* of the spine, by whose Luxation people become gibbous, or otherwise crooked. But externall causes of Dislocations are, fals from high, bruising and heavy blowes, the Rack, strappado, slipping in going, and all such like things, which may force the heads of the bones to fly out of their seats, or cavities, which also happens sometimes to infants in their birth, when as they are too carelesly and violently drawn forth by the Midwife, so that either their arms or

Externall causes.

Hereditarie causes. legs are put out of joint. Hereditarie causes are such as the Parents transfuse into their off-spring: hence it is, that crooked not necessarily, but oftentimes are generated by crooked, and lame by lame. The truth

*Sect. 3. sent. 38. & 94. sect. 82. 4. sent. 3. & 4. lib. de art.*

whereof is evident by daily experience. Besides also *Hippocrates* himself avers, that infants in the very

Children may have Impostumes in their mothers wombs.

womb may have their Joints dislocated by a fall, blow and compression, and by the too much humidity and loosnes of the Joints: whence also we see many crook legg'd and footed from their nativity; so that none need marvell or make any doubt hereof. We have read it observed by *Galen In librum de Artic.* that children may have impostumes in their mothers wombs, which may cast forth quitture, the ulcers being opened of their own accord, and be cicatrized by the only benefit of nature. It also happens to many from their first conformation, that the cavities of their Joints are lesse depreset than they should be, and that their verges are more dilated than they ought to be; whereby it happens that the heads of the bones can the lesse enter into them. It falls out, that other some have the ligaments, appointed by nature for fastning together the bones of the joint, whether inserted or placed about, so weak, that from their first originall they are not of sufficient strength, or else abound with much Phlegm, either bred together with them, or flowing from some other place; so that by their too much slipperinesse they lesse faithfully contain the knittings or articulations of the bones. In all these as the bones are easily dislocated, so they may presently be easily restored without the assistance of a Surgeon, as I have sometimes observed in some.

## CHAP. IIII. *The signs of dislocations.*

The common sign of all dislocations. SOme of the signs whereby we come to the knowledg of a luxated bone, are common to all dislocations; others are proper only to severall Luxations. It is a common sign, that there is alwaies a tumor in that part whereto the bone runs, and a hollownes on that side from whence it is flown. Now the proper signs shall be shewed, when as we come to treat of the particular kindes of Luxations. We know a perfect Dislocation by the lost action of the part, that is to say, the lost motion; pain also breeds a suspicion of a dislocation: for the head of the bone, which (moved out of its place) is forced into another, presses the flesh, and distends the nerves also moved out of their place. Hereto also conduces the comparing of the sound joint with that which is hurt, in which collation, it is fit the sound part, which is compared with the hurt, be no waies, neither by nature nor any accident, wronged, nor

defor-

deformed, nor withered or decayed, nor ſwoln above meaſure, otherwiſe it may cozen and deceive you, if you be leſſe warie. Labour and difficulty of action in moving, is a ſign of an uncomplete Luxation, or ſtrain. Now we thus know, that the ligaments, ſerving to the connexion of the articulations, are extended and relaxed, if the head of the bone, preſſed with your fingers, be eaſily driven unto the contrary part, and ſodainly fly thence back again; if thruſting your finger into the joint, it eaſily enter, nothing reſiſting it, as though all were empty within; if the motion be difficult, or none at all. Signs of an unperfect diſlocation.

## CHAP. V. *Of Prognoſticks to be made upon luxations.*

ALl Joints may be perverted or luxated, but all of them cannot in like manner be reſtored. For the head may be diſlocated, but thereupon preſent death enſues, by reaſon of the compreſſion of the whole ſpinall marrow preſently at the originall thereof; ſuch alſo is the diſlocation of a *vertebra* of the ſpine, and of the Jaw-bone, which, ſlipped forth on both ſides, hath cauſed inflammation, and a great tumor before that it be ſet. The bones of other Joints, as they are more or leſſe diſlocated, and moved out of their ſeats, ſo may they be more eaſily or difficultly reſtored. For, by how much they are the leſſe moved out of their places, by ſo much they are the more quickly, and by how much they are the further, by ſo much they are the more ſlowly and difficultly ſet. Alſo an indication, taken from the figure of the luxated bone, gives a ſign of the eaſie or hard reſtoring of the diſlocation; as in the Arm, by how much the bones be the more eaſily diſlocated, by ſo much once luxated they are the more eaſily reſtored. Bones do not eaſily fall out of joint in fleſhy bodies; but when they chance to be put out, they are not eaſily got in again. For in ſuch, the articulation is ſtraitly on every ſide held in by the thickneſs of the muſcles, and the plenty of the fat lying thereabouts. On the contrarie, ſuch as are lean, eſpecially thoſe who formerly have been more fat, have their joints more lax, whereby it comes to paſſe, that their bones may eaſily be put forth of joint: beſides alſo, through the default of the digeſtive facultie, they have their joints replete with mucous humors; whence it is, that the heads of the bones, as ſtanding in a ſlippery place, are the leſſe ſtable, as it is recorded by *Hippocrates*. But ſlender bodies, which are naturally dry, compact and denſe, have their muſcles and ligaments more ſtrong and dry; wherefore their bones are the more difficultly diſplaced; and diſplaced, the more difficultly ſet. Some bones, joined amongſt themſelves, do ſometimes fly aſunder, as when the ſhoulder blade flyes from the collar-bone at the *Acromium*, and in the Arm the Ell from the Wand, and in the Leg the one focile from the other, and the Heel-bone from the Ancle. Bones thus ſeparated will never be joined together again, will never recover their former comely figure, never their ſtrength of action. For, then it moſt uſually happens, that the ligaments are either broke aſunder, or elſe reſolved and become lax. Thoſe whoſe bones are diſlocated by an externall cauſe, they, after they be ſet, may eaſily fall out again, for that the ligaments, moiſtened and bedewed with an excrementitious humor, cannot firmly hold them: oft-times the ligaments are not wholly broken, but only in ſome portion thereof; and hence the action of the part either periſhes, or is debilitated. Alſo that diſlocation is uncurable, when as the ligaments, ſteeped and ſwoln up with an excrementitious hnmidity, are ſo much ſhortened and contracted in their length, as they have acquired in their breadth: and thus they draw away and pluck off the *appendices* of the bones from whence they ariſe, and by reaſon the bone and the *appendix* do enter and receive each other by many cavities and promi-nencies, therefore they cannot, by how skilfull hand ſoever they be handled, be again fitly placed and put together. Old and inveterate diſlocations, wherein a tough humor poſſeſſing the cavity is concrete in ſtead of the head of the bone, are not to be reſtored; as neither when the heads of the luxated bones have by continuall attrition made themſelves a new cavity in the neighbouring bone; neither if they be reſtored, is the reſtitution firm and of continuance; becauſe the naturall cavity is poſſeſſed by another matter, and the new made near thereto cannot well and faithfully contain the received head of the bone. Thoſe who have their ſhoulder diſlocated, may uſe their hand for many actions, as well as the oppoſite ſound hand; for the weight of the body is not ſuſtained by the hands as it is by the legs. And by how much the hand is the more exerciſed, by ſo much the arm becomes the more corpulent. Contrarily, if the thigh-bone be diſlocated, eſpecially if it be wreſted inwards, the whole leg quickly decayes by an *atrophia*, becauſe the part doth abſolutely loſe all motion; for by the opinion of *Hippocrates*, the performance of the proper action encreaſes ſtrength, and makes the part in better plight; but idleneſs debilitates and makes it lean. If a great wound and fracture be joined with a luxation, there is danger, leſt while we uſe extention for reſtoring the part, we draw the nerves too violently; and ſo break the nerves, veins and arteries, whence would enſue fear of inflammation, convulſion, and other malign ſymptomes. Wherefore *Hippocrates* judges it better in ſuch a concourſe and complication of preternaturall affects, abſolutely not to meddle at all with the ſetting of the diſlocated bone: for, by attempting the reſtitution, certain death, but by omitting it only lameneſs is to be feared. Every diſlocation muſt be reſtored before inflammation come; but if it be already preſent, you muſt preſently be careſull to take it away. For other things, let the Patient reſt, leſt if the affect be irritated, the increaſe and exceſſe of pain cauſe a convulſion, gangrene, and laſtly death, as I remember I have ſometimes obſerved. Therefore when inflammation, and other malign ſymptomes ſhall be mitigated and corrected, then may you endevour to reſtore the luxation, eſpecially if the habit of the body and member affected may admit it. For if the body be ſlender, delicate and tender, then the reſtitution will be more ſpeedy and facile. But on the contrary, more difficult, if it be groſſe and compact; And let thus much ſuffice for prognoſticks in Luxations.

VVhat luxations be uncurable.

VVhy thoſe bones which are hardly diſlocated, are hard to be ſet.

*Sect. 1. de artic. ſent. 29.*

*Celſus lib. 8. cap. 11.*

VVhy the plucking of an *appendix* from a bone is uncurable.

*Hipp. ſent. 88 ſect. 3. de art.*

*Sent. 10. ſect. 5. lib. 6. epid. & ſect. 2. de art. ſent. 88.*

You muſt not endevour to ſet an inflamed joint.

CHAP.

## CHAP. VI. *Of the generall cure of Dislocations.*

Five inventions in curing dislocations.

FOr all that I have heretofore delivered the generall method of curing fractures and dislocations, yet it shall not be unprofitable to repeat here in this place, those things which may be accommodated to this Treatise of curing luxations. Now he that will cure dislocations, must have regard to five intentions, which it will be fitting to perform in order. The first is, of holding; the second, of drawing or extending; the third, of forcing in; the fourth, of placing in convenient figure and site; the fifth, of correcting the concomitant, or following symptomes.

The benefit of holding the member in dislocations.

The first scope, which we said was of holding, is meant either of the whole body, or else of some part thereof only. The whole body must be holden by the strong embracement of your servant or attendant, when as the shoulder, the *vertebræ*, or the thigh bones are dislocated. But in the dislocation of the collar-bone, elbow, hand, knee, or foot and leg, it is sufficient only to hold the part straitly in your hands. There is necessity of holding either the body, or else some part thereof, lest, while the dislocated bone is extended, the whole body follow by continuance of parts, if there be nothing which may hinder: for if the body should follow him that draws or extends, all the work-masters labour and endeavour to restore it, is to no purpose.

The use of extension.

The use of the second scope, that is, of drawing or extending, is, that there may be a free space and distance between the luxated bones, by which distance the dislocated bone may the more freely be forced into its cavity. But the manner of drawing or extending is different in quantity and manner, according to the various strength of the muscles and ligaments, and dislocation of the bones to this or that part. Therefore this work is almost alwayes performed by the hands; which when they cannot suffice, we must use the assistance of instruments and engins, whose figures you shall see hereafter delineated.

The manner of setting it, or putting it into its place.

But that you may not do amiss, you may so far use extension, untill the head of the bone be brought just against its cavity. When the Surgeon hath brought it to this pass, then must he hasten to the third intention, which is, to put the head of the bone first moved and gently bended, into its cavity. For he must have a speciall care, that he force it no other way than into its proper cavity: for it would be dangerous, lest he should turn it from one extream into another, and the bone, for examples sake, of the thigh, which was dislocated into the fore-part by too violent forcing, by exceeding the middle cavity, may be driven and dislocated into the hinder part. To shun this, the bone shall be put back the same way that it fell out, which may be easily done in fresh and late happening dislocations.

Signs that the bone is set.

We understand that the bone is set by the noise, or as it were a popp, or sound like that, which solid and sounding bodies, being fully and forcibly thrust into their cavities, do make; by the similitude & consent in figure, magnitude and all conformation of the affected part with the sound, and lastly, by the mitigation of the pain.

The benefit of fit placing the member.

The fourth scope, which is of the convenient site of the part, must be so fulfilled, that the bone after it is set may be kept in its cavity, and not fly forth again. Wherefore if the arm be dislocated, it shall be carryed bound up in a scarf: if the thigh, knee, leg, or foot be luxated, they shall be fitly laid in a bed; but in the *interim* the Surgeon, presently after he hath set them, shall have a care, that the affected joint be wrapped about with stoups and clothes, or compresses steeped in rose vinegar, and spred with convenient medicins, then let it be bound with an artificiall deligation, rowling the ligatures unto the part contrary to that whereto the dislocated bone flew.

The manner of binding up the set joint.

For the which purpose thicker boulsters shall be there applied whence the bone came out, other wise there will be some danger, lest it should be again displaced: when these things are done, he shall for four or five daies space meddle with nothing about the dislocation, unless pain, or some such like symptome happen. For then the fifth scope will call us from that cessation and rest, which is, to correct the symptomes and complicate affections, as pain, inflammation, a wound, fracture, and others,

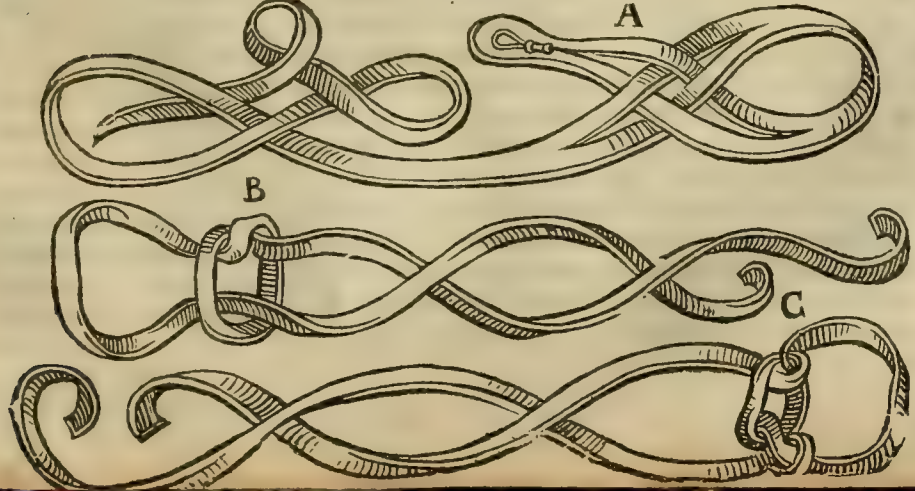
The cure of inveterate luxations.

whereof we have spoken abundantly in our Treatise of Fractures. Before we attempt to set inveterate dislocations, we must endeavour to humect the ligaments, tendons and muscles by fomentations, cataplasms, emplasters, liniments, and other remedies, that so these parts may be more obedient to the Surgeons hand; then must the dislocated bones be moved with a gentle motion up and down, to and again, that by this means the excrementitious humour, which by continuance of time hath flowed down, may wax hot, be attenuated, resolved or made slippery, and also the fibres of the muscles, ligaments, and nervous bodies, placed about the joint for the defence thereof, may be loosed, that so they may presently be more freely extended. But if a great swelling, pain, and inflammation urge, we must first think of asswaging and curing them, then of the restoring the dislocation.

## CHAP. VII. *The description of certain engines, serving for the restoring of Dislocations.*

The delineation of the three Ligatures.

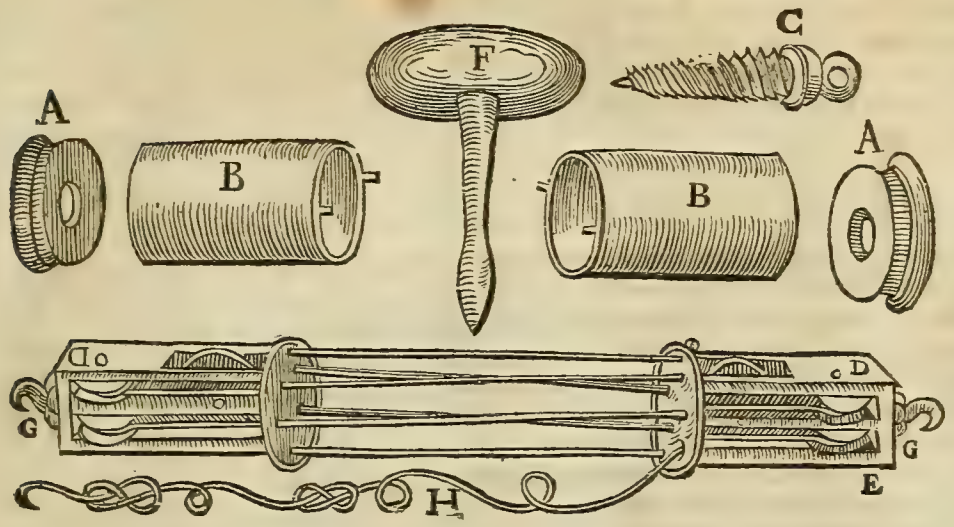
These ligatures are not for deligation, but extension.




BEfore I come to the particular kinds of dislocations, I think it not amiss to describe three sorts of bandages, and give you their figures, as those which are most fit to hold and extend dislocations. The first ligature, designed by this letter *A*, is made for holding the member. The second, marked with the letter *B*, is fit for

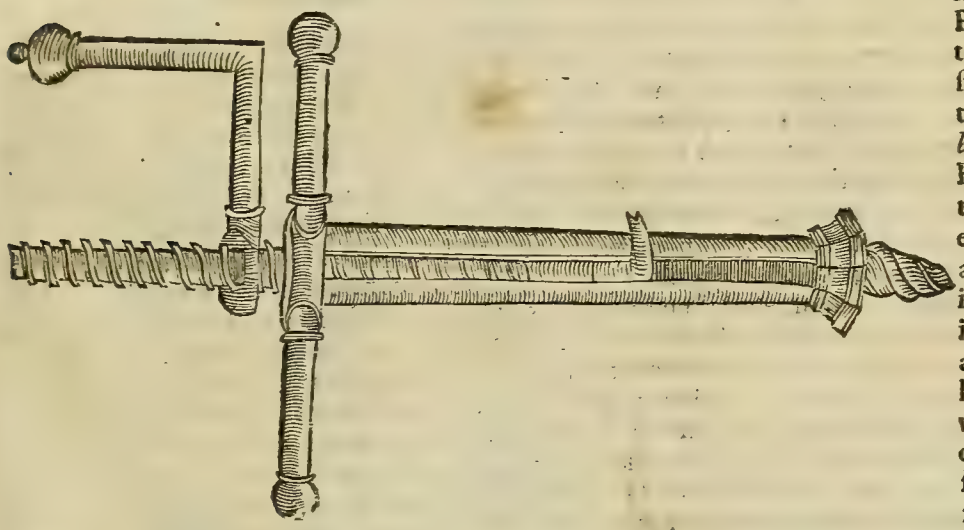
for drawing or extension, and consists of one knot. The third, whereto the letter *C* is put, consisting of two knots, is to hold or bind more straitly.

*A Pulley.*




I have thought good also to delineate the following Engine, made for to draw and extend more powerfully, when the hand will not serve. It is made like a Pulley, marked with these letters *D D*. Within this there lye hid 3. wheels, through whose furrowes runs the rope which is to be drawn, marked with this letter *H*. At the ends of the pulley are hooks fastned, the one of which is to fasten the Pulley to a Post, the other is to draw the ligature fastned to the part. The Boxes or Cases wherein the Pulley is kept, is marked with *B B*. Their Covers are marked with *A A*. A screw pin which may be twined, and so fastned to a Post, that so one of the ends of the pulley may be hooked thereto, is signed with *C*. A Gimlet (marked by *F*.) to make a hole in a Post, so to let in the screw pin. You may see all these things expresst in the precedent figure.

*Manubrium versatile*, or, *A Handvice.*



Some Practitioners in stead of this Pulley, make use of this described instrument, which they terme *Manubrium versatile*, or a Handvice. The end thereof is fashioned like a Gimblet, and is to be twined into a Post. Within that handle lies a screw with a hooked end, whereto the string or ligature must be fastned. Now the screw-rod or male-screw runs into the female by twining about of the handle; and thus the ligature is drawn as much as will suffice, for the setting the dislocated bone. Having delivered these things thus in generall, now I come to treat of the Luxations of each part, from the jaw bone even to the toes of the feet.

## CHAP. VIII. *Of the dislocation of the Jaw bone.*

THe Jaw bone is dislocated by many occasions, and not seldome by yawning, and other more strong openings of the mouth. It is more frequently luxated into the fore, than into the hinder part, by reason of the mammillary additaments, which hinder it from falling backwards. The dislocation is sometimes but on one side, otherwhiles on both. If the one side only be luxated, it (together with the chin) is drawn awry unto the contrary side which is not dislocated; the place is hollow from whence it is flown, but swoln whither it is gone; the Patient cannot shut his mouth, but is forc't to gape, so that he cannot eat; the Jaw, together with the teeth therein, hangs somewhat forwards; neither do the teeth answer fitly to one another, but the dog teeth are under the shearers. But if both sides be dislocated, all the jaw and chin hang forwards and towards the breast; besides also, the temporall muscles appear distended, spittle runs out of the Patients mouth against his will, the lower teeth stand further forth than the upper, which is the occasion that the mouth cannot be shut, neither the tongue have free volubility to speak, the Patient stammering in his speech. When it is dislocated on both sides, it is more difficultly restored, and all the symptomes are more vehement; wherefore it must be set with all speed, otherwise the Patient will presently have grievous pain about his throat, inflammation, a feaver, whereupon oft times death ensues within ten dayes, by reason of the five branches of nerves, which, arising from the second and fifth conjugation of the brain, are distributed into the moving muscles thereof, which too violently extended, brings

The causes, Differences, Signs that only one part is dislocated.

Signs that both sides are dislocated.

Prognosticks.

Why death quickly ensues upon the dislocation of both sides of the jaw.

bring the forementioned symptomes. Practitioners affirm, that the Jaw twelve dayes after it is set, is free from the danger of relapse. If it have been dislocated some few dayes before you go about to restore it, you must use softning and relaxing medicins to it; but when it is put in the joint, apply a medicine made of the whites of egs, and oil of roses to asswage pain, and apply cloths dipped in oxycrate. At the second dressing you shall apply such things as have power to agglutinate and strengthen the ligaments and other relaxed parts, and also to keep it being restored in its place. This shall be the form of such a medicine. An astringent medicine. R. *Pulv. boli armeni, sang. draconis, farinæ volat. mastich. pi is, resinæ, an. ʒ. ß. albuminis ovorum q. s. fiat medicamentum*; afterwards you may use *emplast. Diacalcitheos* dissolved in oil of roses and vinegar, and other things, as occasion shall be.

## CHAP. IX. *How to set the Jaw dislocated forwards on both sides.*

The first manner of setting a jaw bone. FIrst of all the Patient must be placed upon the ground, or some low seat with his face upwards, and his head must be firmly held by your servant, that so it may be the more immoveable: then the Surgeon shall put both his thumbs, wrapped in cloths (lest he hurt them by rubbing them upon the Patients teeth, as also to keep them from slipping) into the Patients mouth, and press with them the larger teeth of the luxated jaw, but put his other fingers without under his chin, and so lift up the whole jaw with them. Another. But if the operation cannot be thus done, for that the mouth on the inside is so shut and closed that the thumbs cannot be put thereinto, then must you thrust in woodden wedges made of soft wood, as hazle or firre, being cut square, and of some fingers thickness. These shall be wedged in on each side above the grinders; then cast a ligature under his chin, whose ends your servant shal hold in his hands, and setting his knees upon the Patients shoulders, shall pull them upwards; then at the same time the Surgeon shall press downwards the woodden wedges. The jaw bones thus restored, shall be kept so by convenient ligation, and dressed with medicins, as it is fitting; and in the mean space you must forbid the Patient to speak, or needlesly to open his mouth. Diet. Wherefore he must abstain from hard meats, and such as require much chewing, untill his pain be quite passed, and use only spoon meats, as Barley-creams, ponadoes, jellies, cullasses, broths, and the like.

## CHAP. X. *Of restoring the Jaw dislocated forwards but on one side.*

What the Surgeon. THe Patient must be placed on a low seat, so that he may be under the Surgeon; then your servant, standing at his back, shall hold his head firm and steddy, that it may not follow the Surgeon drawing, extending, and doing other things necessary for restoring it. Then the Surgeon, putting his thumb between the grinders, shall press down the jaw, and gently drawing it aside, force it into its cavity; in the mean while also the Patient, as much as in What the Patient ought to do him lyes, shall help forwards the Surgeons endeavour, in opening his mouth as little as he can, lest the muscles should be extended; and he shall only gape so wide as to admit the Surgeons thumb, for so the temporall muscles shall be restored to their place and favour the restitution. If he open his mouth as wide as he can, they will be extended after a convulsive manner; if on the contrary he shut his teeth too close, Signs that the jaw is dislocated backwards. there will be no passage for the Surgeons thumb unto his grinding teeth. Some there be which affirm, that the jaw bone may sometimes be dislocated towards the hind part, and that then the mouth is so close shut, that the Patient cannot open it nor gape, and that the lower rank of teeth stands further in, and nearer the throat than the upper. The cure. Now for restoring it, the Patients head must be straitly holden behind, whilst the Surgeon, the mean while putting both his thumbs into the Patients mouth, holding his other fingers without under the Patients chin, he shall, by shaking it, draw it to him, or forwards, and so restore it to its place. For my own part, I confess I never saw this kind of Luxation, and I easily perswade my self that it can scarce ever happen, for the reason I gave in the former chapter. But nevertheless, if it by any means chance to happen, yet can it not be a perfect luxation, but an imperfect one; the jaw being only but a little thrust back to the throat to those mammillary additaments. And then it may easily be restored by lifting or drawing forth the jaw, and suddenly forcing it from below upwards.

## CHAP. XI. *Of the Luxation of the Collar bone.*

Differences of the luxated collar bones. AS the Collar bones may be broken, wrested and crooked, so also they may be dislocated. Now they are dislocated, either against the *sternum*, or against the shoulder blade, or *acromion* thereof: yet both these kinds of dislocations are very rare, by reason of the strait and firm connexion which the collar bone hath with the foresaid parts; but chiefly where it is joined to the *sternum*, The cure. it can scarce be depresst, for that it is as it were underpropt with the first rib. But it may be dislocated inwardly, outwardly, and side-wise, and according to this variety there must be divers wayes to restore it; yet generally the collar bone is put into its place by moving or extending the arm. But if need require, the Patient shall be laid upon the ground with his face upwards, a Tray with the bottome upwards, a hard stuffed cushion, or the like thing being put under his shoulders; for thus it will so come to pass, that the shoulder and chest will stand so forth, that presently by lifting up, by pressing down, or drawing forth the arm forwards or backwards, as the bone shall be flown out to this or that part, you may restore it; for thus the prominency may be forced into its cavity. But it will be requisite to bind it up and lay boul- *Com. ad sent. 62. sect. 1. de art.* sters thereon, and to give it rest, as if it were fractured. *Galen* writes, that when he was five and thirty years old, whilst he exercised himself in the place of exercise, his collar bone was so far separated from the *Acromion*, that there was the space of three fingers between them. And that this luxation was restored

in

in forty dayes ſpace, by ſo ſtrait and ſtrong a ligation, that he perceived the motion of the beating arteries under the bone. But you ſhall find very few, who will ſuffer ſuch ſtrait ligation ſo long, though it be never ſo neceſſary. Verily, this kind of luxation is hard to be known, but far more difficult to be healed. I have known many Surgeons deceived, who have taken the luxation of the collar bone for the diſlocation of the top of the ſhoulder. For then the *Epomis*, or top of the ſhoulder ſwels, and the place from whence the collar bone is flown is depreſſed with a manifeſt cavity, with vehement pain, inflammation, and impotency of lifting up, or otherwiſe moving the arm, or performing other actions which are done by the help of the ſhoulder. Certainly, if this bone, when it is diſlocated, be not ſet, the Patient ſhall be lame during his life, ſo that he ſhall not be able, neither to put his hand to his head nor mouth.

## CHAP. XII. *Of the luxation of the Spine, or Back bone.*

THe Back bone conſiſts of many bony *vertebræ*, like rowls or wheels mutually jointed or knit together, by their ſmoothneſs and circular form conſpiring to an aptneſs of moving or bending forwards. For if it ſhould conſiſt of one bone, we ſhould ſtand continually with the trunk of our bodies immoveable, as thruſt through with a ſtake. The *vertebræ* have a hole paſſing through the midſt of them, whereby the marrow, paſſing this way out from the brain as by a pipe, may ſerve for the generation of the ſenſitive and motive nerves, and their diſtribution into all parts beneath the head. For which purpoſe it is perforated with many holes on the ſides, through each whereof certain conjugations of the nerves paſs forth into the reſt of the body, and veins and arteries paſs in for the propagation of nouriſhment and life. The whole exterior face of the Spine is rough, and as it were armed with four ſorts of *apophyſes*, or proceſſes, whereof ſome ſtand up, others down; ſome direct, others tranſverſe. Wherefore from theſe thorny and ſharp proceſſes, the whole hath acquired the name of the *Spina*. The *vertebræ* the further from the neck they are, the greater they grow, ſo that thoſe which are the loweſt, are the largeſt; for it is agreeable to reaſon, that that which bears, ſhould be bigger than that which is born. Hence we ſee, that the holy bone is placed under the reſt as a foundation. The ſide proceſſes of the rack bones of the cheſt, beſides the benefit of defending the ſpinall marrow ſhut up therein from externall injuries, have alſo another, which is, they firm and faſten the bones of the ribs by a ſtrong tye. There lyes a griſtle, and a tough, and (as it were) albuminous humor between the *vertebræ*, which makes them, as alſo all the other joints of the body, ſlippery, and fit for motion: the ſpine is flexible with notable agility forwards only, but not backwards, for that ſo there would be continuall danger of breaking the hollow aſcendent vein, and the great deſcending artery running thereunder. Therefore the dearticulations of the *vertebræ*, mutually ſtrengthened with ſtrong ligaments, do look more backwards. I have thought good to premiſe theſe things of the nature of the ſpine, before I come to diſlocations happening thereto: I willingly omit divers other things which are moſt copiouſly delivered by *Galen*, content only to adde thus much; that there is nothing to be found in the whole ſtructure of mans bones, which more clearly manifeſts the induſtry of Gods great workmanſhip, than this compoſure of the ſpine and the *vertebræ* thereof.

An anatomicall deſcription of the Spine.

The variety of the proceſſes of the Spine.

*Gal. cap. 7. lib. 13. de uſu partium.*

*Lib. 13. de uſu partium.*

## CHAP. XIII. *Of the diſlocation of the head.*

THe head ſtands upon the neck knit by dearticulation to the firſt *vertebræ* thereof, by the interpoſition of two proceſſes which ariſe from the *baſis* thereof, near the hole through which the marrow of the brain paſſes down into the back bone, and they are received by fit cavities, hollowed in this firſt *vertebra*. Theſe proceſſes ſometimes fall out of their cavities, and cauſe a diſlocation behind, whereby the ſpinall marrow is too violently and hard compreſſed, bruiſed and extended, the chin is faſtned to the breaſt, and the Patient can neither drink nor ſpeak: wherefore death ſpeedily follows upon this kind of luxation, not through any fault of the Surgeon, but by the greatneſs of the diſeaſe, refuſing all cure.

The connexion of the head with the firſt Rack bone of the neck.

Prognoſticks.

## CHAP. XIV. *Of the diſlocation of the* vertebræ, *or rack bones of the neck.*

THe other *vertebræ* of the neck may be both diſlocated and ſtrained. Diſlocation verily, unleſs it be ſpeedily helped, brings ſudden death: for, by this means the ſpinal marrow is preſently oppreſt at the very originall thereof, and the nerves, therehence ariſing, ſuffer alſo together therewith, and principally thoſe which ſerve for reſpiration; whereby it cometh to paſs, that the *animal* ſpirit cannot come and diſperſe its ſelf into the reſt of the body lying thereunder; hence proceed ſudden inflammation, the ſquinſie, and a difficulty, or rather a defect of breathing. But a ſtrain or incompleat luxation brings not the like calamity: by this the *vertebræ*, a little moved out of their ſeats, are turned a little to the hind or fore-part, then the neck is wreſted aſide, the face looks black, and there is difficulty of ſpeaking and breathing. Such, whether diſlocation or ſtrain, is thus reſtored. The Patient muſt be ſet upon a low ſeat, and then one muſt lean and lye with his whole weight upon his ſhoulders;

The danger hereof.

Signs and ſymptoms of their ſubluxation.

The cure.

Signs of their restitution.

and the mean while the Surgeon must take the Patients head, about his ears, betwixt his hands, and so shake and move it to every part, untill the *vertebra* be restored to its place. We may know it is set by the sudden ceasing of the pain, which before grievously afflicted the Patient, and by the free turning and moving his head and neck every way. After the restoring it, the head must be inclined to the part opposite to the Luxation, and the neck must be bound up about the dearticulation of the shoulder; but yet so, that the ligature be not too strait, lest by pressing the weazon and gullet, it straiten the passages of breathing and swallowing.

## CHAP. XV. *Of the Dislocated* Vertebræ *of the Back.*

Differences and signes.

Causes.

THe Rack bones of the back may be dislocated inwards, outwards, to the right side and to the left. We know they are dislocated inwards, when as they leave a depressed cavity in the spine; outwardly, when they make a bunch on the back; and we know they are luxated to the right or left side, when as they obliquely bunch forth to this or that side. The *vertebræ* are dislocated by a cause either internall, or externall, as is common to all other Luxations; the internall is either the defluxion of humors from the whole body, or any part to them and their ligaments; or else a congestion proceeding from the proper and native weakness of these parts; or an attraction arising from pain and heat. The externall is a fall from high upon some hard body, a heavie and bruising blow, much and often stooping, as in Dressers and Lookers to Vineyards, and Paviers, decrepit old men; and also such, as through an incurable dislocation of the thigh-bone, are forced in walking to stoop down, and hold their hand upon their thigh. But a *vertebra* cannot be forced or thrust inwards, unless by a great deal of violence; and if it at any time happen, it is not but with the breaking of the tyes and ligaments, for they will break rather than suffer so great extension. Such a dislocation is deadly, for that the spinall marrow is exceedingly violated by too strait compression, whence proceeds dulness, and losse of sense in the members lying thereunder. Neither is restitution to be hoped for, because we cannot through the belly force it into its place: the urine is then suppresst, as also the excrements of the belly; sometimes on the contrary, both of them break forth against the Patients minde, the knees and legs grow cold, their sense and motion being lost. Such things happen more frequently, when the spine is luxated inwards, than when it is dislocated outwards, for that the nerves, thence arising, run and are carryed more inwardly into the body. Besides the pressed Spinall marrow becomes inflamed; and that being inflamed, the parts of the same kind, & such as are joined thereto, are also inflamed by consent, whence it happeneth, that the bladder cannot cast forth the urine. Now where the sinews are pressed, they can no more receive the irradiation of the animal faculty. Hence follows the deprivation of the sense and motion in the parts whereto they are carryed, therefore the contained excrements do no more provoke to expulsion by their troublesome sense, neither are pressed to keep them in; thence proceeds their suppression, and hence their breaking forth against their wils. But the spine outwardly dislocated, scarce causes any compression of the marrow or nerves.

The danger of a *vertebra* dislocated inwards.

*Hipp. sent. 51. sect. 3. de art. & Gal. in com.*

## CHAP. XVI. *How to restore the Spine outwardly dislocated.*

The cure.

THe *vertebræ* outwardly dislocated, when as they stand bunching forth, then it is fit to lay and stretch forth the Patient upon a table, with his face downwards, and straitly to bind him about with towels under the arm-pits, and about the flanks and thighs. And then to draw and extend, as much as we can, upwards and downwards, yet without violence: for unless such extension be made, restitution is not to be hoped for, by reason of the proeesses and hollowed cavities of the *vertebræ*, whereby, for the faster knitting, they mutually receive each other. Then must you lye with your hands upon the extuberancyes, and force in the prominent *vertebra*. But if it cannot be thus restored, then wil it be convenient to wrappe two peeces of wood, of four

Another manner of cure.

four fingers long, and one thick, more or lesse, in linnen cloths, and so to apply one on each side of the dislocated *vertebræ*, and so with your hands to press them against the bunching forth *vertebræ*, untill you force them back into their seats, just after the manner you see it before delineated.

In the mean while have a care, that you touch not the processes which stand up in the ridg of the Spine, for they are easily broken. You may know that the *vertebræ* are restored by the equall smoothness of the whole Spine. It is fit, after you have restored it, to bind up the part, and lay splints or plates of Lead neatly made for that purpose upon it; but so, that they may not press the crists or middle processes of the *vertebræ*, which I formerly mentioned, but only the sides: then the Patient shall be laid upon his back in his bed, and the splints long kept on, lest the *vertebræ* should fall out again.

How to keep the restored *vertebræ* in their places.

## CHAP. XVIII. *A more particular inquirie of the dislocation of the* Verteb. æ, *proceeding from an internall cause.*

THe *vertebræ* are in like sort luxated by the antecedent cause, as we have formerly said, which is caused by the naturall imbecilitie of the parts, principally of the nervous ligament, by which all the *vertebræ* are bound each to other; this ligament comes not to the spinall marrow, but only bindes together the *vertebræ* on their outsides. For, besides the two membranes proceeding from the two *Meninges* of the Brain, wherewith the marrow is covered, there is a third strong and nervous coat put upon it, lest, whilst the spine is diversly bended, the bended marrow should be broken. This third coat arises from the *pericranium*, as soon as it arrives at the first *vertebra* of the neck. Now that ligament, wherewith we said the joints of the *vertebræ* were mutually knit and fastned, is encompassed with a tough and glutinous humor for the freer motion of the *vertebræ*. Sometimes another cold, crude, gross and viscid humor, confused and mixed herewith by great defluxions and catarrhs, begets a tumor, which doth not only distend the nerves proceeding forth of the holes of the *vertebræ*, but also distends the ligaments wherewith they are bound together: which so distended, and (as it were) drawn aside, do draw together with them the *vertebræ*, one while towards the right side, another while to the left, somewhiles inwards, otherwhiles outwards, and thus move them out of their seats, and dislocate them. A dislocated *vertebra*, standing forth and making a bunch, is termed in Greek *Cyphosis*, (Those thus affected we may call, *Bunch-backt*. But when it is depressed, it is named *Lordosis*, (Such we may term, *Saddle-backt*.) But when the same is luxated to the right or left side, it maketh a *Scoliosis* (or *Crookedness*,) which wresting the spine, draws it into the similitude of this letter S. *Galen* adds a fourth default of the *vertebræ*, which is, when their joints are moved by reason of the looseness of their ligaments, the *vertebræ* yet remaining in their places, and he cals it a *Seisis* (or shaking.) They also note another defect peculiar to the spinall marrow, which is, when as it (the *vertebræ* being not moved whereto it adheres) is plucked and severed from them: this disease is occasioned by a fall from on high, by a great stroak, and by all occasions which may much shake, and consequently depresse the spinall marrow, or by any other means remove, or put it forth of its place. Scarce any recovers of this disease, for many reasons, which any exercised in the art, may easily think upon: But let us return to the internall cause of Luxations. Fluid and soft bodies, such as Childrens, usually are very subject to generate this internall cause of defluxion. If externall occasions shall concur with these internall causes, the *vertebræ* will sooner be dislocated. Thus Nurses, whilst they too straitly lace the breasts and sides of girles, so to make them slender, cause the breast-bone to cast its self in forwards or backwards, or else the one shoulder to be bigger or fuller, the other more spare and lean. The same error is committed, if they lay children more frequently and long upon their sides, than upon their backs; or if, taking them up when they wake, they take them only by the feet or legs, and never put their other hand under their backs, never so much as thinking that children grow most towards their heads.

*Cyphosis. Lordosis. Scoliosis.*

*Com. ad sent. 2. sect. 3. lib. de art. Seisis.*

The separation of the spinall marrow from the encompassing *vertebræ*.

The error of Nurses in binding and lacing of Children.

## CHAP. XVIII. *Prognosticks of the Dislocated* Vertebræ *of the back.*

IF in Infancy it happen that the *vertebræ* of the back shall be dislocated, the ribs will grow little or nothing in breadth, but run outwards before; therefore the chest loseth its naturall latitude, and stands out with a sharp point. Hence they become asthmatick, the lungs and muscles which serve for breathing, being pressed together and straitned; and that they may the easilier breath, they are forced to hold up their heads, whence also they seem to have great throats. Now because the weazen being thus pressed, the breath is carryed through a strait passage; therefore they whease as they breath, and snort in their sleep, for that their lungs, which receive and send forth the breath or air, be of lesse bignes: besides also, they are subject to great distillations upon their lungs, whereby it cometh to pass, that they are shorter lived. But such as are bunch-backed below the midriffe, are incident to diseases of the kidneys and bladder, and have smaller and slenderer thighs and legs, and they more slowly and sparingly cast forth hair and have beards; to conclude, they are lesse fruitfull, and more subject to barrenness, than such as have their crookedness above their midriffe. The Bunches which proceed from external causes are oft-times curable; but such as have their original from an inward cause, are absolutely uncurable, unless they be withstood at the first with great care

*Hipp. sent. 6. sect. 3. de art.*

and industry. Wherefore such as have it by kind, never are helped. Such as, whilst they are yet children, before their bodies be come to perfect growth, have their spine crooked and bunching out, their bodies use not to grow at the spine, but their legs and arms come to their perfect and full growth; yet the parts belonging to their breasts and back, become more slender. Neither is it any wonder, for seeing the veins, arteries, and nerves are not in their places, the spirits do neither freely, nor the alimentary juices plenteously flow by these straitened passages, whence leanness must needs ensue: but the limbs shall thence have no wrong, for that not the whole body, but the neighbouring parts only are infected with the contagion of this evil. When divers *vertebræ*, following each other in order, are together and at one time dislocated, the dislocation is less dangerous, than if one alone were luxated. For, when one only *vertebra* is dislocated, it carries the spinall marrow so away with it, that it forces it almost into a sharp angle; wherefore being more straitly pressed, it must necessarily be either broken or hurt, which is absolutely deadly, for that it is the brains substitute. But when divers *vertebræ* are dislocated at once, it must of necessity be forced only into an obtuse angle, or rather a semicircle; by which compression it certainly suffers, but not so, as that death must necessarily ensue thereof. Hereto may seem to belong that which is pronounced by *Hippocrates*; a circular moving of the *vertebræ* out of their places is less dangerous than an angular.

Why, when the spine is luxated, the parts belonging to the chest are nourished and grow the lesse.

Why the luxation of one *vertebra* is more dangerous than of many.

*Sent.* 51. *sect.* 3. *lib. de art.*

## CHAP. XIX. *Of the dislocation of the rump.*

The rump oft-times is after a sort dislocated inwards by a violent fall upon the buttocks, or a great blow; in this affect the Patient cannot bring his heel to his buttocks, neither, unless with much force, bend his knee. Going to stool is painfull to him, neither can he sit unless in a hollow chair. That this (as it were) dislocation may be restored, you must thrust your finger in by the Fundament, even to the place affected, as we have said in a fracture; then must you strongly raise up the bone, and with your other hand at the same time join it rightly on the outside with the neighbouring parts; lastly, it must be strengthened with the formerly mentioned remedies, and kept in its place. Now it will be recovered about the twentieth day after it is set. During all which time the Patient must not go to stool, unless sitting upon a hollow seat, lest the bone, as yet scarce well recovered, should fall again out of its place.

The signs.

The cure.

## CHAP. XX. *Of the luxation of the ribs.*

The ribs may by a great and bruising stroak be dislocated, and fall from the *vertebræ* whereto they are articulated, and they may be driven inwards, or sidewaies. Of which kind of luxation, though there be no particular mention made by the Ancients, yet they confess, that all the bones may fall, or be removed from their seats or cavities, wherein they are received and articulated. The sign of a rib dislocated and slipped on one side, is, a manifest inequality; which here makes a hollowness, and there a bunching forth; but it is a sign that it is driven in, when as there is only a depressed cavity where it is knit and fastned to the *vertebræ*. Such dislocations cause divers symptoms, as difficulty of breathing, the hurt rib hindring the free moving of the chest; a painfulness in bowing down, or lifting up the body, occasioned by a pain counterfeiting a pleurisie; the rising or puffing up of the musculous flesh about the rib, by a mucous and flatulent humor there generated: the reasons whereof we formerly mentioned in our Treatise of Fractures. To withstand all these, the dislocation must be forthwith restored, then the puffing up of the flesh must be helped. Wherefore, if the dislocated rib shall fall upon the upper side of the *vertebra*, the Patient shall be set upright, hanging by his arms upon the top of some high door or window: then the head of the rib, where it stands forth, shall be pressed down untill it be put into its cavity. Again, if the rib shall fall out upon the lower side of the *vertebra*, it wil be requisite, that the Patient bend his face downwards, setting his hands upon his knees; then the dislocation may be restored by pressing or thrusting in the knot or buneh which stands forth. But if the luxated rib fall inwards, it can no more be restored or drawn forth by the hand of the surgeon, than a *vertebra* which is dislocated towards the inside, for the reasons formerly delivered.

Causes.

Signs.

Cure.

*Gal. com. ad sent.* 3. *sect.* 1. *de art.*

## CHAP. XXI. *Of a dislocated shoulder.*

The shoulder is easily dislocated, because the ligaments of its dearticulation are soft and loose; as also for that the cavity of the shoulder blade is not very deep; and besides, it is every where smooth and polite, no otherwise than that of the shoulder bone, for that it is herein received. Adde hereunto, that there is no internall ligament from bone to bone, which may strengthen that dearticulation, as is in the leg and knee. Wherein notwithstanding, we must not think nature defective, but rather admire Gods providence in this thing; for that this articulation serves not only for extension and bending, as that of the Elbow, but besides, for a round or circular motion, as that which carries the arm round about, now up, then down, according to each difference of site. The shoulder bone, which *Hippocrates* cals the arm bone, may be dislocated four manner of wayes: upwards, downwards, or into the arm-pit, forwards and outwards, but never backwards, or to the hind part. For, seeing that there the cavity of the blade bone, which receives the head of the arm-bone, which *Hippocrates* cals a joint, lyes and stands against it; who is it that can but imagin any such dislocation? In like sort it is never dislocated inwardly

Why there is no internall ligament from the arm bone to the shoulder blade.

Differences of a luxated shoulder.

*Sent.* 1. *sect.* 1. *lib. de art.*

inwardly, for on this part it hath the fleſh of a ſtrong muſcle, termed *Deltoides*, lying over it, beſides alſo the back and *acromion* of the blade, and laſtly, the anker-like, or beak-like proceſs, all which four hinder this joint from ſlipping inwards. Now *Hippocrates* ſaith, that he hath only ſeen one kind of diſlocation of this bone, to wit, that which is downwards or to the arm-pit: and certainly it is the moſt uſuall and frequent; wherefore we intend to handle it in the firſt place. When the ſhoulder is diſlocated downwards into the arm-pit, a depreſſed cavity may be perceived in the upper part of the joint; the *acromion* of the blade ſhewes more ſharp and ſtanding forth than ordinary, for that the head of the ſhoulder bone is ſlipt down, and hid under the arm-pit, cauſing a ſwelling forth in that place; the elbow alſo caſts it ſelf (as it were) outwards, and ſtands further off from the ribs; and though you force it, yet can you not make it to touch them; the Patient cannot lift up his hand to his ear on that ſide, neither to his mouth, nor ſhoulder. Which ſign is not peculiar to the luxated ſhoulder, but common to it, affected with a contuſion, fracture, inflammation, wound, abſceſs, *ſchirrus*, or any defluxion upon the nerves, ariſing out of the *vertebræ* of the neck, and ſent into the arm: alſo this arm is longer than the other. Laſtly, (which alſo is common to each difference of a luxated ſhoulder) the Patient can move his arm by no kind of motion without ſenſe of pain, by reaſon of the extended and preſſed muſcles, ſome alſo of their fibres being broken. There are ſix wayes to reſtore the ſhoulder luxated downwards into the arm-pit. The firſt is, when it is performed with ones fiſt, or a towel; the ſecond, with a clew of yarn, which put under the arm-pit, ſhall be thruſt up with ones heel; the third, with ones ſhoulder put under the arm hole, which manner, together with the firſt, is moſt fit for new and eaſily to be reſtored luxations, as in thoſe who have looſe fleſh, and effeminate perſons, as children, eunuches, and women; the fourth, with a ball put under the arm pit, and then the arm caſt over a piece of wood held upon two mens ſhoulders, or two ſtanding poſts; the fifth, with a ladder; the ſixth, with an inſtrument, called an *Ambi*. We will deſcribe theſe ſix waies, and preſent them to your view.

Signs of the ſhoulder diſlocated downwards.

The wayes to reſtore it.

## CHAP. XXII. *Of the firſt manner of ſetting a ſhoulder, which is with ones fiſt.*

FIrſt, let one of ſufficient ſtrength, placed on the oppoſite ſide, firmly hold the Patient upon the joint of the ſhoulder, leſt he move up and down with his whole body, at the neceſſary extenſion, working & putting it in: then let another, taking hold of his arm above the elbow, ſo draw and extend it downwards, that the head thereof may be ſet juſt againſt its cavity, hollowed in the blade bone. Then at laſt let the Surgeon lift and force up with his fiſt the head of the bone into its cavity. Here this is chiefly to be obſerved, that in freſh luxations, eſpecially in a body ſoft, effeminate, moiſt, and not over corpulent, that it ſometimes comes to paſs, that by the only means of juſt extenſion, the head of the bone freed from the muſcles and other particles wherewith it was, as it were, entangled, will betake it ſelf into its proper cavity; the muſcles being by this means reſtored to their place and figure, and drawing the bone with them, as they draw themſelves towards their heads, as it were with a ſudden gird or twitch: wherefore in many, whilſt we thought no ſuch thing, it ſufficed for reſtitution only to have extended the arm. But if the luxation be inveterate, and the hand cannot ſerve, then muſt the Patients ſhoulder be faſtned to a poſt with the forementioned ligature, or elſe committed to ones charge, who may ſtand at his back and hold him faſt. Then the arm ſhall preſently be tyed about, a little above the elbow, with a fillet, whereto a cord ſhall be faſtned; which being put or faſtned to the pulley, ſhal be drawn or ſtretched forth, as much as need ſhall require. Laſtly the Surgeon, with a towel, or ſuch like ligature, faſtned about his neck and hanging down, and ſo put under the Patients arm-pit near to the luxation, ſhall, raiſing himſelfe upon his feet with the whole ſtrength of his neck, lift up the ſhoulder, and alſo at the ſame time bringing his arm to the Patients breaſt, ſhall ſet the head of the ſhoulder bone, forced with both his hands into its cavity, as you may ſee by the precedent figure. Then muſt you cover all the adjacent parts with a medicine made *ex farina volatili, bolo armenio, myrtillis, pice, reſina & alumine*, beaten into powder, and mixed with the white

*Gal. com. ad ſent. 23. ſect. 1. de art.*

*An expreſſion of the firſt manner of putting a ſhoulder into joint.*

A perfect ſetting the luxated ſhoulder by extenſion only.

of an eg. Then muſt the hollowneſs under the arm be filled with a clew of woollen or cotten yarn, or a linnen cloth ſpred over with a little oil of Roſes or Myrtles, a little vinegar, and *unguentum roſatum*, or *infrigidans Galeni*, leſt it ſtick to the hairs, if there be any there. The part muſt afterwards be bound up with a ligature, conſiſting of two heads, of ſome five fingers bredth, and two els long; more or leſs, according as the body ſhall require. The midſt thereof ſhall be put immediately under the arm pit, and then croſſed over the lame ſhoulder, and ſo croſſing it as much as ſhall be fit, it ſhall be wrapped under the oppoſite arm. And laſtly, the arm ſhall be laid upon the breaſt, and put in a ſcarf, in a middle figure almoſt to right angles, ſo that by lifting up the hand he may almoſt touch his ſound ſhoulder, leſt the bone newly ſet, may fall out again; neither ſhall the firſt dreſſing be ſtirred, untill four or five dayes be paſt, unleſs the greatneſs of ſome happening ſymptome divert us from this our purpoſe.

## CHAP. XII. *Of the ſecond manner of reſtoring a ſhoulder, that is, with the heel; when as the Patient by reaſon of pain can neither ſit, nor ſtand.*

*Hip. ſent. 12. ſect. 1. de art.*

THE Patient muſt be laid with his back on the ground upon a cover-lid, or mat, and a clew of yarn or leathern ball, ſtuffed with tow or cotten, of ſuch bigneſs as may ſerve to fill up the cavity, muſt be put under his arm-pit, that ſo the bone may ſtraight waies the more eaſily be forced by the heel into its cavity. Then let the Surgeon ſit beſide him, even over againſt the luxated ſhoulder; and if his right ſhoulder be luxated, he ſhall put his right heel to the ball, which filled up the arm-pit; but if the left, then the left heel; then let him forthwith draw towards him the Patients arm, taking hold thereof with both his hands, and at the ſame inſtant of time ſtrongly preſs the arm-pit with his heel. Whilſt this is in doing, one ſhall ſtand at the Patients back, who ſhall lift up his ſhoulder with a towel, or ſome ſuch thing fitted for that purpoſe, and alſo with his heel preſs down the top of the ſhoulder blade: another alſo ſhal ſit on the other ſide of the Patient, who, holding him, ſhal hinder him from ſtirring this way or that way at the neceſſary extenſion in ſetting it, as you may ſee it expreſt by the precedent figure.

*The expreſſion of the ſecond manner of reſtoring a ſhoulder.*

## CHAP. XXIV. *Of the third manner of reſtoring a ſhoulder.*

SOme one who is of a competent height and ſtrength ſhall put the ſharp part of the top of his ſhoulder under the Patients arm-pit, and alſo at the ſame time ſhall ſomewhat violently draw his arme towards his owne breaſt, ſo that the Patients whole body may (as it were) hang thereby. In the mean time another, for the greater impreſſion, ſhall lay his weight on the luxated ſhoulder, ſhaking it with his whole body. Thus the ſhoulder, drawn downwards by the one which ſtands under the arm-hole, and moved and ſhaken by the other, who hangs upon it, may be reſtored into its ſeat, by the help of the Surgeon concurring therewith, and with his hand governing theſe violent motions, as this figure ſhewes.

*The figure of the third manner of putting a ſhoulder into joint.*

CHAP.

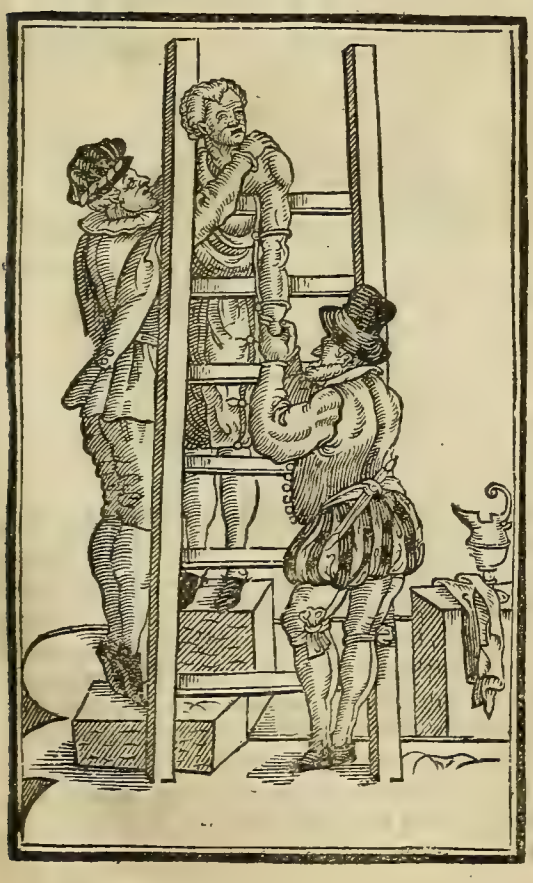
## CHAP. XXV. *Of the fourth manner of restoring a dislocated shoulder.*

*The figure of the fourth manner of restoring the shoulder.*

YOu must take a perch, or piece of wood (somewhat resembling that which the Water-bearers of *Paris* use to put on their shoulders) some two inches broad, and some six foot long; in the midst hereof let there be fastned a clew of yarn, or ball of sufficient bigness to fill up the cavity of the arm-hole. Let there be two pins put in, one on each side of the ball, each alike distant therefrom, with which, as with staies, the shoulder may be kept in, and upon the ball, that it slip not away from it. Let two strong men, taller than the Patient, either by nature or art, put this perch upon their shoulders; then let the Patient put his arm-pit upon that place where the ball stands up; the Surgeon must be ready to pull his hanging arm downwards. Thus the Patient shall (as it were) hang on the perch with his shoulder, and so the head of the bone shall be forced into its cavity, as this figure declares; wherein you may see the perch or yoak, with the two woodden pins and ball fastned in the midst, delineated by its self.

## CHAP. XXVI. *Of the fifth manner of putting the shoulder into joint, which is performed by a Ladder.*

*The delineation of the fifth manner of restoring a shoulder.*



YOu may also restore a shoulder dislocated into the arm-pit, by the help of a Ladder, after this manner. Let some round body, as a ball, or clew of yarn, which (as we formerly said) may serve to fill the arm-pit, be fastned upon one of the upper steps of a Ladder; at the foot of the Ladder set a low stool, whereupon let the Patient mount; then bind both his legs, and also his sound arm behind his back, lest, when you are about your operation, he hinder and spoil all you do, by laying his hand, or setting his foot upon the ladder. Then let his arm be presently put over the step of the Ladder, and his arm-pit put upon the there fastned ball, the Patient in the mean while being wished to come with his whole body as near unto the steps of the Ladder as he is able; for otherwise, besides that there is no other hope of restoring the luxation, there would be no small danger of breaking the shoulder bone. Also let him take heed, that he put not his head between the steps. Then his arm, bound above the Elbow with filletting, or some other ligature fit for that purpose, shall be drawn down by the hand of some that assist you, and at the same time let the stool be plucked from under his feet, so that he may hang upon the ladder. Thus by this means the head of the shoulder will be restored by its self, the endeavour of the Surgeon assisting, and pressing down the shoulder blade, and moving it to and again. The bone being

being ſet, the ſtool, which a little before was plucked from under the Patients feet, ſhall be put there again, that he may, with the more eaſe and leſs pain, pull back his arm from the ſtep of the Ladder. For if he ſhould lift it high up to draw it over, there would be danger, leſt being newly ſet, and not well ſtaid, the head of the bone might fall out again. I have thought good to have all theſe things here expreſſed, that you may learn this operation, as if you ſee it done before you. I have not thought fit in this place to omit the induſtry of *Nicholas Picart*, the Duke of *Guiſe* his Surgeon; who being called to a certain Country-man to ſet his ſhoulder being out of joint, and finding none in the place beſides the Patient and his wife, who might aſſiſt him in this work, he put the Patient, bound after the forementioned manner, to a Ladder; then immediately he tyed a ſtaffe at the lower end of the Ligature, which was faſtned about the Patients arm above his elbow; then put it ſo tyed under one of the ſteps of the Ladder, as low as he could, and got aſtride thereupon, and ſate thereon with his whole weight, and at the ſame inſtant made his wife to pluck the ſtool from under his feet: which being done, the bone preſently came into its place, as you may ſee by the following figure.

*Another figure expreſſing the fourth manner of reſtoring a diſlocated ſhoulder.*

*Another figure to the ſame purpoſe.*

If you have never a Ladder, you may uſe a peece of Wood, laid acroſs upon two Poſts. Alſo you may uſe a door, as the other figure ſhewes, wherein you muſt obſerve a flat piece of wood or *ſpatula* with ſtrings thereat, whoſe uſe ſhall be ſhown in the following Chapter.

## CHAP. XXVII. *The ſixth manner of reſtoring a ſhoulder, luxated into the arm-pit.*

*Sect. 1. lib. 1. de art. ſent. 19.*

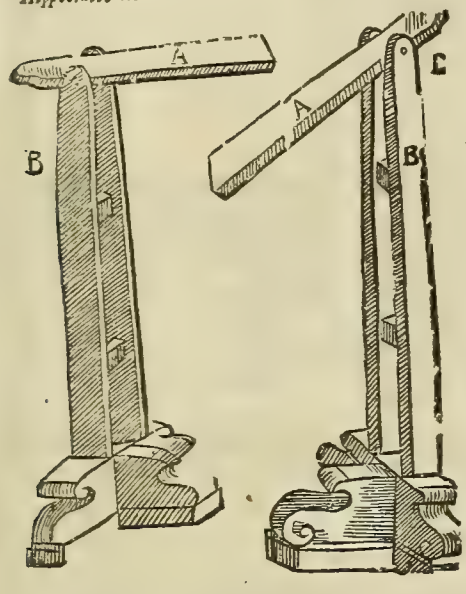
*Hippocrates* writes, that this is the beſt way of all to reſtore a diſlocated ſhoulder. You muſt take a woodden *ſpatula* of ſome four or five fingers bredth, and ſome two fingers thickneſs or leſs, but ſome yard or thereupon long; the one end thereof muſt be narrow and thin, with a round head ſtanding up and lightly hollowed, that put under the arm-pit, it may receive part of the head of the ſhoulder bone, the which for that purpoſe muſt not bend towards the ribs, but to the top of the ſhoulder. This upper part of the *ſpatula* muſt be wrapped about with a linnen or woollen rag, or ſome ſuch ſoft thing, that it may be the ſofter, and hurt the leſs; and then it muſt be ſo thruſt under the arm-pit, that it may throughly penetrate into the inner part between the ribs, and the head of the ſhoulder bone. There muſt, beſides in this *ſpatula*, be two holes in three ſeverall places, each alike diſtant from other, through which let ſoft ſtrings be put, whereby it may be tyed to the arm, ſtretched all the length thereof even to the fingers, in one place a little below the head of the ſhoulder bone, in another

The deſcription of the *Gloſſocomium*, termed *Ambi*.

another a little above the elbow, and the third at the wrist, that so they may hold it firm. Therefore let the distances of the holes be fitted to this purpose; but principally you must have a care of this, that the upper part of the *spatula*, reaching beyond the head of the arm, enter even to the innermost Cavity of the arm-pit; then a crosse pin or piece of wood must be made fast through two posts or a frame, and well fastned thereto, and thereupon the Arm with the *spatula* must be so put over, that the pin may be under the arm-pit, the body weighing one way, and the arm another: which being done, the arm must be drawn down one way, and the body another about the pin. Now this crosse pin must be put on such a height that the Patient may stand on tiptoes. Now this is the very best way of restoring a shoulder. In stead of two posts or a frame, you may make shift with a ladder, doore, beds posts, and such like things as shall be there present. I have heard *Henry Arvet*, a very good Surgeon of *Orleans* say, that he never attempted this manner of putting into joint a shoulder dislocated into the arm-pit without good successe, unlesse by chance (which also is noted by *Hippocrates*) that the flesh is grown into the cavity, and the head of the bone hath made it self another cavity in the place whereinto it is fallen; for in this case the bone will either not be restored, or else not remain in its place, but fall back notwithstanding into the new hollowed cavity, which serves it in stead of its naturall socket or cavity. But I must here admonish young Surgeons, that if the bone be not restored at the first endeavour and onset, that they doe not despair and presently desist from their intended operation, but they must wind about, and gently move the joint: for so at the length it will be more easily moved, and enter into the naturall cavity. When it is in, it must be bound up with compresses and rowlers after the forementioned manner.

*Sect. 1. de art. sent. 21.*

*Hippocrates his* Glossocomium *termed* Ambi.




To the former figures I have thought good to adde this, which expresseth the manner of restoring a shoulder luxated into the arm-pit with a *spatula* after the manner of *Hippocrates*. This *spatula* fastned with an iron pin to the standing frame may be turned, lifted up, and pressed down at your pleasure. A. shewes the wooden *spatula*. B. the frame or standing posts.

*Hipp. sent. 64. 4. de artic.*

*The figure of an* Ambi *fitted to a dislocated shoulder.*

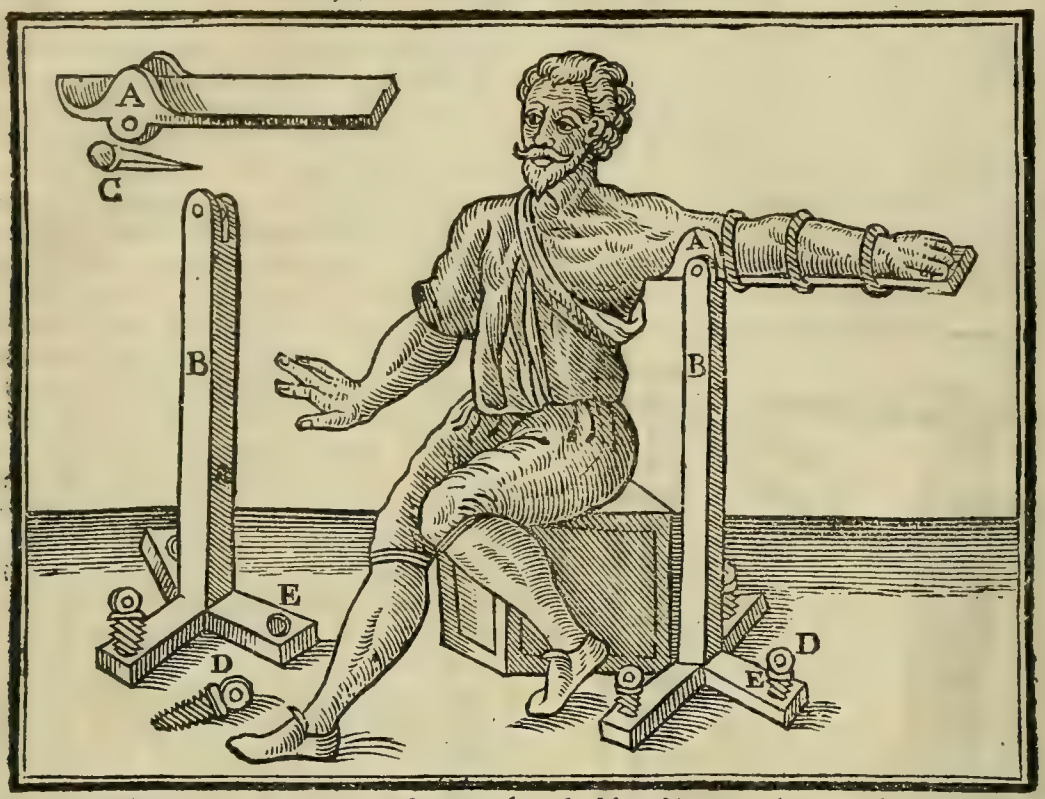
How to make use of the *Ambi*.

For the more certain use of this instrument the Patient must sit upon a seat which must be somewhat lower than the standing frame, that so the *spatula* which is thrust into the arm-pit may be the more forcibly depressed, so to force in the head of the shoulder bone; the Patients feet must also be tyed, that he may not raise himself up whilest the Surgeon endevours to restore it. Now he shall then endevour to restore it when he shall have bound the stretched forth arm of the dislocated shoulder unto the *spatula*, and thrust the one end thereof under the slipped forth head of the shoulder bone, as we have formerly shewed; for then by pressing down the other end of the *spatula* which goes to the hand, the bone is forced into its cavity. You must diligently observe the wooden *spatula*, which therefore I have caused to be expressed by it self, which *Hippocrates* calleth *Ambi*, whose head is a little hollowed where it is noted with this letter B. The whole *spatula* is marked with this letter A. with three strings hanging thereat, provided for the binding of the arm, that it may be kept steddy, as you may perceive by the annexed figure.

There

There are other additions to this *Ambi*, whoſe figure I now exhibited to your view, by the invention of *Nicholas Picart* the Duke of *Lorrain's* Surgeon, the uſe and knowledg whereof, beſtowed upon me by the inventor himſelf, I would not envie the ſtudious reader.

*Another figure of an* Ambi *with the additaments.*




AA. Shew the two eares, as it were, ſtops made to hold and keep in the top of the ſhoulder, leſt it ſhould ſlip out when it is put into the frame or ſupporter.

BB. The frame or ſupporter whereon the *Ambi* reſts.

CC. The pin or axeltree which faſtens the *Ambi* to the ſupporter.

DD. Screw-pins to faſten the foot of the ſupporter that it ſtir not in the operation.

EE. The holes in the foot of the ſupporter, whereby you may faſten the ſcrew-pins to the floor.

## CHAP. XXVIII. *How to reſtore a ſhoulder diſlacoted forwards.*

IT is ſeldome that the ſhoulder is luxated towards the foreſide; yet there is nothing ſo ſtable and firm in our bodies which may not be violated by a violent aſſault; ſo that thoſe bones do alſo fall out of joint, whoſe articulations are ſtrengthned for the firmer connexion with fleſhly, nervous, griſtly and bony ſtayes, or bars. This you may perceive by this kind of diſlocated ſhoulder, ſtrengthned as it were with a ſtrong wall on every hand; to wit, the *Acromium* and the end of the collar-bone, ſeeming to hinder it, as alſo the great and ſtrong muſcles, *Epomis*, and *Biceps*. *Hippocrates*, ſhut up within the ſtrait bounds of the leſſer *Aſia*, never ſaw this kind of diſlocation, which was obſerved five times by *Galen*. I profeſſe I have ſeen it but once, and that was in a certain Nun, which weary of the Nunnery, caſt her ſelf down out of a window, and bore the fall and weight of her body upon her elbow, ſo that her ſhoulder was diſlocated forwards. This kind of diſlocation is known by the depravation of the conformation or figure of the member, by the head of the ſhoulder wreſted out towards the breaſt, as alſo the Patient cannot bend his elbow. It is reſtored by the ſame meanes as other luxations of other parts, to wit, by ſtrait holding, extending, and forcing in. Therefore the Patient muſt be placed upon the ground with his face upwards, and then you muſt extend the ſhoulder otherwiſe than you do when it is luxated into the arm-pit. For when it falleth into the arm-hole, it is firſt drawn forwards, then forced upwards, untill it be brought juſt againſt the cavity whereinto it muſt enter. But in this kind of luxation, becauſe the top of the ſhoulder is in the fore parts of the dearticulation ſhut up with muſcles, opened both to the outer, as alſo to the inner part, you muſt worke to the contrary; to wit, to the hinde part. But firſt of all you muſt place a ſervant at the back of the Patient, who may draw back a ſtrong & broad Bandage caſt about the arm-pit (ſuch as is the *Carcheſius*, which conſiſts of two contrary and continued ſtrings) leſt that when the arm ſhall be extended, the ſhoulder follow: alſo you muſt put a clew of yarn to fill up the arm-pit. Then muſt you extend the arm, caſting another ligature a little above the elbow, and in the interim have a care that the head thereof fall not into the arm-pit, which may be done both by putting the forementioned clew under the arm, and drawing the head another way; then muſt you permit, by ſlacking your extenſion, the joint freed from the encompaſſing muſcles, to be drawn and forced into its cavity by the muſcles forcible recoiling, as with an unanimous conſent, into themſelves and their originals, for thus it will eaſily be reſtored, and ſuch extenſion only is ſufficient thereto.

*Com. ad ſent. 2 & 23. ſect. 1. de articulis.*

Signs.

Cure.

*Sent. 23. ſect. 1. de art.*

CHAP.

## CHAP. XXIX. *Of the shoulder luxated outwardly.*

THe dislocation also of the shoulder to the outward parts seldome happens; but yet, if it may at any time happen, the extension of the arm will be very difficult, but yet more difficult towards the outward part than towards the inward; there is a depressed cavity perceived towards the chest; but externally a bunching forth, to wit, in that part from whence the head of the shoulder bone is fled. For the restoring hereof, the Patient must be laid flat on his belly, and the elbow must be forcibly drawn contrary to that whereto it is fled, to wit, inwardly to the breast; and also the standing forth head of the arm-bone must be forced into its cavity, for thus it shall be easily restored. But into what part soever the shoulder bone is dislocated, the arm must be extended and drawn directly downwards. After the restitution fitting medicins shall be put about the joint. Let there be somewhat put into the arm-pit which may fil it up, and let compresses or boulsters be applyed to that part to which the luxated bone fel; then all these things shall be strengthened and held fast with a strong and broad two headed ligature put under the arm-pit, and so brought across upon the joint of the shoulder, and thence carryed unto the opposite arm-pit by so many windings as shall be judged requisite. Then the arm must be put and carried in a scarf to right angles, which figure must be observed not only in every luxation of the shoulder, but in each fracture of the arm also, for that it is less painfull, and consequently, such as the arm may stand the longest therein without moving.

Signs.

The cure.

VVhat to be done to hold in the shoulder after it is restored.

## CHAP. XXX. *Of the shoulder dislocated upwards.*

THe head of the shoulder also may sometimes be luxated into the upper part. Which when it happens, it shewes it self by bunching forth at the end of the collar bone, the hollowness of the arm-pit is found larger than usuall, the elbow flyes further from the ribs than when it fell downwards, now the arm is wholly unable to perform the usuall actions. It is fit for the restitution of such a luxation, that the Surgeon stoop down, and put his shoulder under the Patients arm, and then stand up as high as he can upon his feet, and therewithall press down the head of the shoulder bone into the cavity, or else make some other to do it. Otherwise it is fit to lay the Patient upon his back on the ground, and whilst some one extends the affected arm by drawing it downwards, the Surgeon with his own hand may force down the head of the bone into its cavity. The operation performed, the same things shall be done as in other luxations, compresses being applyed to that part whereto the bone flew, and it being also bound up with ligatures. Now you may understand in these four forementioned kinds of dislocations, that the bone which was luxated is restored, by the sound which shall be heard as you force it in, by the restitution of the accustomed actions, which are perceived by the bending, extending, and lifting it up, by the mitigation of the pain, and lastly, by the collation and comparing of the affected arm with the sound, and by its similitude and equality therewith.

Signs.

Cure.

## CHAP. XXXI. *Of the dislocation of the elbow.*

THe elbow may also be four manner of wayes dislocated; to wit, inwardly, outwardly, upwards, and downwards. By the part which is inwards, I mean that which looks towards the center of the body, when as the arm is placed in a naturall site, to wit, in a middle figure between prone and supine; I make the outward part, that which is contrary thereto. By the upper part I mean that which is towards the heaven, and by the lower that which is next to the earth: and by how much the joint of the elbow consists of more heads and cavities then that of the shoulder, by so much when it is luxated it is the more difficultly set, and it is also more subject to inflammation, and to grow hard thereupon, as *Hippocrates* saith. Now the joint of the elbow is more difficultly dislocated than that of the shoulder, and more hardly set, for that the bones of the cubit and arm do receive and enter each other by that manner of articulation which is termed *Ginglymus*, as we have formerly more at large treated in our Anatomy, and a little before in our Treatise of fractures. The elbow is therefore dislocated, for that the processes thereof are not turned about the shoulder bone in a full orb, and by an absolute turning. Wherefore if at any time the cubit be bended more straitly and closely than that the inner process can retain its place and station in the bottom of its *sinus*, the hind process falleth out and is dislocated backwards. But when as the fore process is extended more violently, and forced against the bottom of its cavity, it flyes and departs out of its place as beaten or forced thence, and this kind of luxation is far more difficultly restored than the former: adde hereunto that the utter extremity of the cubit, which is called *Olecranum*, is the higher, but the other inner is the lower; whence it is that every one can better and more easily bend than extend their cubits. Therefore such a dislocation is caused by a more violent force, than that which is made to the inner side. *The sign of this luxation is, the arm remains extended, neither can it be bended, for the innner processe stayes in the externall cavity which is hollowed in the bottom of the shoulder bone, which formerly was possessed by the inner part of the *Olecranum*; which thing makes the restitution difficult, for that this processe is kept, as it were, imprisoned there. But when it falleth out dislocated to the fore part, the arm is crooked, neither is it extended, and it is also shorter than the other. But if the elbow be fallen out of its place according to the other manner of dislocations, to wit, upwards or downwards; the naturall figure thereof is perverted, for the

The Author seems not to agree with *Hip. Sent. ult. sect. 3. fract.* and *Celsus* in the setting down the kinds of a dislocated Elbow.

* The Author doth not agree with *Hippocr.* and *Celsus*, in setting down the notes of these dislocations: for those notes which are here attributed to an outward and inward luxation, these *Celsus* hath given to an elbow dislocated towards the fore and out part; and those which are here attributed to the elbow dislocated upwards and downwards;

those *Celsus* hath attributed to a dislocation to the out and insides.

arm

Inflammation hinders repoſition.

arm is ſtretched forth, but little notwithſtanding bended towards that part from whence the bone went, that is, figured after a middle manner between bending and extending thereof. What kind ſoever of diſlocation ſhall befall it, the action of the elbow will either not be at all, or certainly not well untill that it be reſtored to its former place; there is a ſwelling in the part whereinto it is flown, and a cavity there from whence it is fled, which alſo happens in the diſlocations of all other parts. Furthermore, one diſlocation of the elbow is compleat and perfect, another imperfect. The latter as it eaſily happens, and through a ſmall occaſion, ſo it is eaſily reſtored; but on the contrary a perfect, as it hardly happens, and not unleſſe with great violence, ſo it is not ſo eaſily reſtored again, eſpecially if that you do not prevent inflammation, for being inflamed it makes the reſtitution either difficult, or wholly impoſſible, principally that which falleth outwards.

## CHAP. XXXII. *How to reſtore the elbow, diſlocated outwardly.*

Signe.

YOu may know that the elbow is diſlocated outwardly, if at any time you ſhall obſerve the arm to be diſtended, and not able to be bended. Wherefore you muſt forthwith undertake the reſtitution thereof, for fear of defluxion and inflammation which the bitterneſſe of pain uſually cauſeth, upon what part ſoever the luxation happen. There is one manner of reſtoring it, which is, you muſt cauſe one to hold hard and ſteddy the Patients arm a little under the joint of the ſhoulder, and in the mean while let the Surgeon draw the arm, taking hold thereof with his hand, and alſo force the ſhoulder bone outwards, and the eminency of the cubit inwards, but let him by little and little draw and extend the arm, wreſting it gently this way and that way, that he may bring back the bone which fell out into its cavity. I have thus expreſſely delivered this, that the young Surgeon may underſtand, that the arm muſt not be bended for the reſtoring of this kind of diſlocation; for reſtitution cannot ſo be hoped for, becauſe by this kind of luxation the inner proceſſe of the cubit poſſeſſeth the place of the exteriour proceſſe in the cavity of the ſhoulder bone. Wherefore whilſt the arm is bended or crooked, the cubit is only lifted up, and not drawn into its ſeat. But if we cannot attain to the reſtitution thereof with our hands alone, you muſt cauſe the diſlocated arm lightly bended to embrace a poſte, then muſt the end of the cubit called *Olecranum* be tyed or bound about with a ſtrong ligature or line, and then wreſted into its cavity by putting a battoon or ſtaff into the ligature, as is demonſtrated by this enſuing figure.

Cure.

A Caution.

*A figure which ſhews the way how to reſtore the elbow, by putting it about a poſt, with a battoon.*

*A figure which ſhewes how to reſtore the elbow by only caſting a line about it.*

There is alſo another more exquiſite way of reſtoring it, which is expreſſed by the latter figure wherein a line of ſome inch bredth is caſt about the *Olecranum* of the arm, embracing a poſt or pillar, and it is drawn ſo long, until the diſlocated bone be brought into its ſeat. Now we know that the bone is returned into its place, and reſtored, when the pain ceaſeth, and the figure and whole naturall conformation is reſtored to the arm, and the bending and extending thereof is eaſie, and not painfull.

CHAP

## CHAP. XXXIII.

### *Of the Dislocation of the Elbow to the inside, and of a compleat and uncompleat Luxation.*

IF the Elbow be dislocated to the inner part, the arme must bee strongly and powerfully extended, then bended quickly and with sudden violence, so that his hand may smite upon his shoulder. Some put some round thing into the bought of the Elbow, and upon that do suddenly force the Elbow to the shoulder, as wee have formerly said. If the Cubit bone bee onely lightly moved out of its place into the upper or lower place, it is easily restored by drawing and forcing it into its cavity, after this following manner. Let two extend the arme, taking hold thereof at the shoulder and wrist, and each draw towards himselfe; and also the Surgeon (who shall there be present) shall force the bone which is dislocated from that part whereunto it is bended, unto the contrary: after he shall thus have restored it, hee shall lay the arme in a strait angle, and so binde it up, and apply fit medicins formerly mentioned, and so let him carry it in a scarfe put about his neck, as we said in the dislocation of the shoulder. *Hippocrates* bids, that the Patient, after it is set, shall often endeavour to bend his hand upwards and downwards, and also extend and bend his arme, yea, and also to attempt to lift up some heavy thing with his hand; for so it will come to passe, that the ligaments of this joint may become more soft, ready, and able to performe their accustomed functions, and also the bones of the cubit and shoulder shall be freed from the affect termed *Ancylosis*, whereto they are incident by the luxations of this part. Now *Ancylosis* is a certaine preternaturall agglutination, coagmentation, and as it were union of sundry and severall bones in the same joint, which afterwards hinders the bending and extension thereof. Now, a *Callus* is generated in the elbow sooner than in any other articulation, whether it remaineth out, or be put into joint, by reason that by rest and cessation from the accustomed actions, a viscide humor which is placed naturally in the joints, as also another which is preternaturall, drawne thither by paine, floweth downe, and is hardned, and gleweth the bones together, as I have observed in many, by reason of the idlenesse and too long rest of this part. Wherefore, that we may withstand this affect, the whole ligation must be loosed sooner and oftner than otherwise, that is to say, every third day, and then the Patients arme must be gently moved every way. Within the space of twenty, or twenty five dayes, these restored bones recover their strength, sooner or later, according to the happening accidents. It is necessary also that the Surgeon know that the *Radius*, or Wand, sometimes falleth out when the Cubit or Ell is wholly dislocated; wherefore hee must bee mindfull in setting the Cubit, that hee also restore the Wand to its place; in the upper part it hath a round processe lightly hollowed, wherein it receiveth the shoulder bone: it hath also an eminency which admitteth the two headed muscle.

The cure.

*Sent. 63. sect. 3. de fract.*

Why the elbow is most subject to *Ancylosis*.

## CHAP. XXXIV.

### *Of the Dislocation of the Styliformis, or bodkin-like processe of the cubit or ell.*

THE processe of the Ell called *Styloides*, being articulated to the wrist by *Diarthrosis*, by which it is received in a small cavity, is dislocated, and falleth out sometimes inwards, somewhiles outwards. The cause usually is the falling of the body from high upon the hands. It is restored, if that you force it into its seat, diligently binde it, and apply thereto very astringent and drying medicines. But yet, though you shall diligently performe all things which may bee done in dislocations, yet you shall never so bring it to passe that this bone shall bee perfectly restored, and absolutely put into the place where hence it went: which thing wee have read, observed by *Hippocrates*; when (saith hee) the greater bone, to wit, the Ell, is removed from the other, that is, the wand, it is not easily restored to its owne nature againe; for that,

Differences and causes.

Cure.

*Sent. 1. sect. 2. & sent. ult sect. 3. de fract.*

that, seeing that neither any other common connexion of two bones, which they call *Symphysis* or union, when it is drawne asunder and destroyed, may be reduced into its former nature, by reason these ligaments wherewith they were formerly contained, and as it were continued, are too violently distended and relaxed, whence it happens, that I have in these cases often observed, that the diligence and care of the Surgeon hath nothing availed.

## CHAP. XXXV.

### *Of the dislocation of the Wrist.*

Here, as before chap. 31. the Author dissents from *Celsus* and *Hippocrat.* in expressing the names and signs of these dislocations.

WE understand by the Wrist, a certaine bony body, consisting of a composure of eight bones knit to the whole Cubit by *Diarthrosis*. For the Wrist considered wholly in its selfe, is knit and articulated with the Ell and Wand: with that, against the little finger; with this, against the thumb: for thus as it were by two connexions, the joint is made more firme. Yet may it be dislocated inwardly, outwardly, and towards the sides. Wee say it is luxated inwardly when the hand stands upwards, but outwardly, when it is crookt in and cannot be extended. But if it chance to be dislocated sidewayes, it stands awry either towards the little finger, or else towards the thumbe, as the luxation befals to this or that side. The cause hereof may seeme to depend upon the different dearticulation of the Ell and Wand with the Hand or Wrist. For the Wand, which is articulated on the lower part with the Wrist at the thumbe, by its upper part, whilst it receives the outward swelling or condyle of the Ell in its cavity, performes the circular motions of the hands. But the Cubit or Ell, which in like sort is connected on the lower part by *Diarthrosis* at the little finger with the Wrist, being articulated on the upper part with the shoulder bone bends and extends, or stretches forth the hand. There is one way to restore the formerly mentioned dislocations. The arme on one side and the hand on another must be extended upon a hard resisting and smooth place, so that it may lye flat; and you must have a care that the part whence the dislocated bone fell, be the lower in its site and place, and the part whither it is gone, the higher. Then to conclude, the prominencies of the bones must be pressed down by the hand of the Surgeon, untill by the force of compression and site the luxated bones be thrust and forced into their places and cavities.

## CHAP. XXXVI.

### *Of the dislocated bones of the Wrist.*

Signe.

THE Wrist consists of eight bones, which cannot, unlesse by extraordinary violence, be put or fall out of their places. Yet if they shall at any time fall out, they will shew it by the tumour of the part whereto they are gone, and by the depression of that wherefrom they are fled. They may bee restored, if the diseased hand be extended upon a table; and if the bones shall be dislocated inwards, the hand shall bee placed with the palme upwards, then the Surgeon shall, with the palme of his hand, presse downe the eminencies of the bones, and force each bone into its place. But if the luxation bee outwards, hee shall lay the palme next to the table, and presse it after the same manner. To conclude, if the luxation shall be toward either side, the luxated bones shall be thrust towards the contrary, and the restored bones shall be presently contained in their places with fit remedies, binding, rowling, and carrying the hand in a scarfe.

Cure.

## Chap. XXXVII.

### *Of the dislocated bones of the After-wrest.*

THere are four bones in the Palm or After-wrest, the two middlemost whereof cannot bee dislocated side-waies, becaus they are hindred and kept from falling aside by the opposition of the parts, as it were resisting them. Neither can that which answereth to the little finger, nor that whereon the fore-finger rest's, bee dislocated towards that side which is next the middle bones, whereof wee now spake, but onely on the other side, free'd from the neighbor-hood of the bones: but all of them may bee dislocated inwardly and outwardly. They may bee restored as those of the Wrest. *Celsus lib. 8. cap. 18.*

## Chap. XXXVIII.

### *Of the dislocated Finger.*

ALso the bones of the fingers may bee four severall waies dislocated, inwardly, outwardly, and at each side. To restore them, they must bee laid straight upon a table, and so put into joint again. For thus they may bee easily restored, by reason their sockets are not deep, and their joints are shorter, and ligaments less strong. In twelv daies space they will recover their strength, as also those dislocations that happen to the Wrest and After-wrest. *Why the dislocated fingers may bee easily restored.*

### *Of a dislocated Thigh, or Hip.*

## Chap. XXXIX.

THe Thigh or Hip may bee dislocated, and fall forth towards all the four parts But most frequently inwards, next to that outwards, but verie seldom either forwards or backwards. A subluxation cannot happen in this joint, as neither in the shoulder, especially from an external cauſ, contrarie to which it usually happen's in the elbow, hand, knee, and foot. The cauſ hereof is, for that the heads of the thigh and shoulder-bone are exactly round, and the sockets which receiv them have certain borders and edges encompassing them: hereunto may bee added, that strong muscles encompas each dearticulation, so that it cannot com to pas that part of the heads of such bones may bee conteined in the cavitie, and other parts stand or fal forth, but that they will quickly bee restored to their places by the motion and wheeling about of the joint, and the strength of the encompassing muscles. But a subluxation may seem to happen in these parts from an internal cauſ. For then the ligaments and ties being softned and relaxed, cannot draw and carrie back the head of the bone standing forth so far as the edges of the socket. If the Hip bee dislocated towards the inner part, that leg becom's longer and larger then the other, but the knee appear's somwhat lower, and look's outwardly with the whole foot, neither can the patient stand upon his leg. To conclude, the head of the Thigh-bone bewray's it self lying in the groin, with a swelling manifest both to the eie and hand; now the leg is longer then that which is sound, for that the head of the thigh is out of it's socket or cavitie, and situated lower, to wit, in the groin, therefore the leg is made by so much the larger. Now the knee stand's forth, becaus necessarily the lower head of the thigh-bone stand's contrarie to the socket. For this is common to all dislocated bones, that when as the dislocation happen's to the one side, the other end of the bone flie's out to the contrarie. Whence it is, that if the upper-head of the thigh-bone shall fall inwards, then the other head, which is at the knee, must necessarily look outwards. The like happen's in other dislocations. The leg cannot bee bended towards the groin, for that the dislocated bone hold's the extending muscles of the same part so stiffly stretched out, that they cannot yeeld, or applie themselvs to the benders. For flexion or bending ought to precede extension, and extension, flexion. *Hip. sent. 68. sect. 3. de art.* *Gal. com. ad sent. 47. sect. 4. de art.* *A subluxation may befal the Thigh from an internal cauſ.*

## CHAP. XL.

*Prognoſticks belonging to a diſlocated Hip.*

Why the thigh-bone diſlocated, is difficultly reſtored, or reſtored, eaſily fall's out again.

THere is this danger in the diſlocations of the Hip, that either the bone cannot bee put into the place again, at leaſt unleſs with very much trouble, or elſ beeing put in, that it may preſently fall out again. For if the tendons of the muſcles, the ligaments, and other nervous parts of the member bee hard and ſtrong, they, by reaſon of their contumacie and ſtiffneſs will hardly ſuffer the bone to return to its place. If that they bee ſoft, looſ, effeminate and weak, they will not contain the reſtored bone in its place. Neither will it bee any better contained, if that ſhort, but yet ſtrong and round ligament, which faſten's the head of the Thigh-bone on the inſide in the Socket or Cavitie of the huckle-bone, bee broken or relaxed. Now it may bee broken by ſom violent ſhock or accident, it may bee relaxed by the congeſtion and long ſtay of ſom excrementitious, tough and viſcuous humor lying about the joint, through which means it waxeth ſoft. But if it bee broken, how often ſoever the bone bee reſtored, it will preſently fall out again. If it bee relaxed, there is onely this hope to contain the reſtored bone, that is, To conſume and draw away the heaped up humiditie by application of Medicines and Cauteries of both kindes, for which purpoſe thoſe are more effectual which do actually burn, for that they drie and ſtrengthen more powerfully. Leanneſs of the bodie, and the want of *Aponeuroſes*, that is, of broad tendont and external ligaments, whereof many encompaſs the knee, encreaſe's the difficultie of containing it in the place. But the parts adjoining to the diſlocated and not-ſet-bone fall away by little and little, and conſume with an *Atrophia* or want of nouriſhment; both becauſ the part it ſelf is forced to deſiſt from the accuſtomed actions and functions, as alſo for that the veins, arteries and nervs beeing more ſtraitned and put out of their places, hinder the ſpirits and nouriſhment from flowing ſo freely as they ought, to the part: whence it com's to paſs, that the part it ſelf is made more weak, the native heat beeing debilitated through idleneſs, it can neither attract the alimentarie juice, neither can it digeſt and aſſimilate that little thereof which flow's and falleth thereto. Verily the Thigh-bone, as long as it is forth of the cavitie, grow's no more after the manner as the other bones of the bodie do, and therefore in ſom ſpace of time you may perceiv it to bee ſhorter then the ſound bone. Notwithſtanding the bones of the leg and foot are not hindered of their growth, for that they are not out of their proper places. Now for that the whole leg appear's more ſlender, you muſt think that happen's onely by the extenuation and leanneſs of the proper muſcles thereof. The ſame thing happen's to the whole hand, in the largeſt acception, when as the ſhoulder is out of joint, unleſs that the calamitie and loſs hereof is the leſs. For the ſhoulder beeing forth of joint you may do ſomthing with your hand, whereby it will com to paſs that no ſmal portion of nouriſhent may flow down into theſe parts. But the Thigh-bone beeing diſlocated, eſpecially inwards in a childe unborn, or an infant, much leſs alimentarie nouriſhment flow's to that part, becauſ it can much leſs uſe the foot and leg by reaſon of the diſlocation of the Hip, then it can do the hand by a luxation of the ſhoulder. But now wee muſt thus underſtand that which is ſaid by *Hippocrates*, That diſlocated bones and not reſtored do decreaſ or are hindered from their juſt growth, to bee onely in thoſe who have not yet attained to their full and naturally-appointed growth in every dimenſion. For in men of full growth, the bones which are not reſtored, becom more ſlender, but yet no ſhorter, as appear's by that which hee hath delivered of the ſhoulder.

*Gal. com. ad ſent. 42. ſect. 4. de art.*

*Hippocrates explained ſect. 1. & 3. lib. de art.*

## CHAP. XLI.

*Of the ſigns af the Hip diſlocated outwardly or inwardly.*

THe Thigh-bone or Hip when it is diſlocated outwardly, and not reſtored, after ſom time the pain is aſſwaged, and fleſh grow's about it, the head of the bone wear's it ſelf a new cavitie in the adjoining Hip, whereinto it betake's it ſelf, ſo that at the length the patients may go without a ſtaff, neither ſo deformed a leanneſs will waſte their leg. But if the luxation happen inwards, a greater leanneſs will befal them, by reaſon that the veſſels naturally run more inwardly, as *Galen* obſerv's in the diſlocation of the *Vertebræ* to the inſide; therefore it com's to paſs that they are more grievouſly oppreſſed: beſides the thigh-bone cannot wag or once ſtir againſt the ſhare-bone: wherefore if the bone thus diſlocated bee not reſtored to its joint again, then they muſt caſt their leg about as they walk, juſt as wee ſee oxen do. Wherefore the ſound leg whil'ſt they go, take's much leſs ſpace then the lame, becauſ this, whil'ſt it ſtirreth or moveth, muſt neceſſarily fetch a compaſs about, but that performeth its motion in a right line. Beſides, whil'ſt the patients ſtand upon their lame leg to put forwards the ſound, they are forced to ſtand crooked, whereupon they are forced to ſtay themſelvs with a ſtaff that they fall not.

*Ad ſent. 51. ſect. 3. de art.*

Further-

Furthermore thoſe who have this bone diſlocated either backwards or outwards, ſo that it cannot bee reſtored, have the part it ſelf grow ſtiff and hard; which is the cauſ why the ham may bee bended without great pain, and they may ſtand, and go upon the tops of their toes; beſides alſo, when they deſire to go faſter, they are forced to ſtoop, and ſtrengthen themſelvs by laying their hand on their lame thigh at every ſtep, both for that their lame leg is the ſhorter, as alſo becauſ the whole weight of the bodie ſhould not lie wholly or perpendicularly upon the joint or head of the thigh-bone. Yet in continuance of time, when they are uſed to it, they may go without any ſtaff in their hands. Yet in the interim, the ſound leg becom's more deformed in the compoſure and figure, becauſ, whilſt it ſuccor's the oppoſite and lame leg by the firm ſtanding on the ground, it bear's the weight of the whole bodie, in performance whereof the ham muſt neceſſarily now and then bend. But on the contrarie, when as the head of the thigh beeing diſlocated inwards is not put into the joint, if the patient bee arrived at his full growth, after that the head of the bone hath made it ſelf a cavitie in the neighboring bone wherein it may reſt, hee may bee able to walk without a ſtaff, becauſ the diſlocated leg cannot eaſily bee bended toward the groin or ham, and hee will ſooner reſt upon his heel then upon his toes. This kinde of diſlocation if it bee inveterate, can never bee reſtored. And theſe things happen, when as the thigh-bone is diſlocated inwards, or when the internal ligament which faſten's the dearticulation ſhall bee broken or relaxed. But the contrarie ſhall plainly appear if the diſlocation ſhall happen to bee outwards; for then the lame leg becom's the ſhorter, becauſ the head of the thigh flie's into a place higher then its cavitie, and the muſcles of that part are contracted towards their original, and couvulſively draw the bone upward together with them. The whole leg, together with the knee and foot looketh inwards, they cannot go upon their heels, but upon the ſetting on of the toes. The leg may bee bended, which it cannot bee in a diſlocation of the thigh inwards, as *Paulus* ſhew's. Therfore wee muſt diligently obſerv that ſentence of *Hippocrates* which is read with a negative, in theſe words: *Sed neque conflectere quemadmodum ſanum crus poſſunt*, that they ought to bee read with an affirmative after this manner: *Sed conflectiere &c. quin & crus ipſum &c.* But now the lame leg will better ſuſtain the weight of the bodie in an external, then in an internal diſlocation; for then the head of the thigh is more perpendicularly ſubject to the whole weight of the bodie. Therefore when in the ſucceſs of time it ſhall by wearing have made it ſelf a cavitie in the neighboring bone, which in time will bee confirmed, ſo that there will remain no hope of reſtoring the diſlocation, nevertheleſs the patient ſhall bee able to go without a ſtaff, for that then no ſenſ of pain will trouble him; whence it follow's, that the whole leg alſo will becom leſs lean, for that going is leſs painful, neither are the veſſels ſo much preſſed as in that diſlocation which is made inwardly.

Signs of the thigh-bone diſlocated outwards.

*Paul. Æg. lib. 6. c. 8. Hip. ſent. 91 ſect. 3. lib. de artic.*

## CHAP XLII.

### *Of the thigh-bone diſlocated forewards.*

IT ſeldom happeneth that the thigh is diſlocated forwards; yet when as it ſhall happen, it is by theſe ſigns. The head of the thigh lieth towards the ſhare; whence the groins ſwell up, and the buttock on the contrarie is wrinkled and extenuated by reaſon of the contraction of the muſcles; the patient cannot extend his leg without pain, no verily, not ſo much as bend it towards the groin, for the fore-muſcle which ariſeth from the hanch-bone is ſo preſſed by the head of the thigh, that it cannot bee diſtended; neither can the ham bee bended with out very much paine. But the ſame leg is equall at the heel with the other leg, yet the patient cannot ſtand upon the ſetting on of the toes; therefore when hee is forced to go, hee toucheth the ground with his heel only, yea verily the ſole of his foot is leſs inclined to the fore ſide, neither doth it ſeldom happen, that the urine, by this accident, is ſuppreſt; becauſe the head of the thigh oppreſſe's the greater nerves from whence thoſe ariſe which are carried to the bladder, which through the occaſion of this compreſſion is pained and inflamed by conſent: now when inflammation ſhall ſeiz upon the *Sphinct*-muſcle, the urine can ſcarcely flow out, for that it is hindered by the ſwelling.

Stopping of urine by reaſon of an internal diſlocation of the thigh-bone.

## CHAP. XLIII.

### *Of the Thigh-bone diſlocated backwards.*

SEldom alſo is the thighbone diſlocated backwards, becauſ the hind-part of the cavitie of the huckle-bone is deeper and more depreſſed than the fore; whence it is that the diſlocation of the thigh to the inner part is more frequent then the reſt. The patient can neither extend nor bend his leg by reaſon of the much compreſſion and tenſion of the muſcles which encompaſs the head of the thigh by this kind

Signs.

of luxation. But the pain is encreaſed when hee would bend his ham, for that then the muſcles are more ſtrongly extended. The lame leg is ſhorter than the ſound: when the Buttocks are preſſed, the head of the thigh is perceived hid amongſt the muſcles of that part, but the oppoſite groin is lax, ſoft, and depre'ſt with a manifeſt cavitie. The heel touche's not the ground, for that the head of the thigh is plucked back again by the muſcles of the buttocks amongſt which it lieth hid, but principally by that which is the larger, and which is ſaid to make as it were the pillow or cuſhion of the buttocks; for this is much more preſſed in this kinde of diſlocation then the reſt: whence it is, that the patient cannot bend his knee, becauſ the extenſion of the nervous production or large tendon which covers's the knee is ſo great. But if the patient will ſtand upon the foot of his luxated leg without a ſtaff, hee ſhall fall down backwards, for that the bodie is inclined to that part, the head of the thigh being not directly underneath for the propping or bearing up of the bodie; wherefore hee is forced to ſuſtain himſelf upon a crutch on his lame ſide. Haveing premiſed theſe things of the differences, ſigns, ſymptoms and prognoſticks, it now remaineth, that wee briefly deſcribe the different waies of reſtoreing them, according to the

*The gentral cure.* difference of the parts whither it is fallen. Firſt, you muſt place the patient upon a bench or table, groveling, or with his face upwards, or upon one ſide, laying ſom ſoft quilt or coverlid under him, that hee may lie the eaſier. Now you muſt place him ſo, that the part unto which the bone is flown, may be higher, but from whence it is fled, the lower. For if the thigh-bone bee diſlocated outwards or backwards, then muſt the patient bee laid groveling; if inwardly, upon his back; if forwards, then upon his ſide. Then muſt extenſion and impulſion bee made towards the cavitie, that ſo it may bee forced thereinto: but if the diſlocation bee freſh, and in a ſoft bodie, as a woman, childe, and ſuch like, whoſe joints are more lax, it ſhall not bee any waies needful to make great extenſion with ſtrong ligatures for the reſtoreing it; the Surgeon's hand ſhall ſuffice, or a liſt or towel caſt about it. In the interim the bone ſhall bee kep't faſt with compreſſes applied about the joint: then the Surgeon ſhall extend the thigh, takeing hold thereof above the knee, in a ſtraight line, and ſo ſet it directly againſt the cavitie, and then preſently thruſt it thereinto. For thus ſhall hee reſtore it, if ſo bee that in thruſtingit hee liſt up the head thereof ſomwhat higher, leſt the lips of the cavitie force it back, and hinder it from entring. Now becauſ unleſs there bee juſt extenſion, there can bee no reſtitution hoped for, it is far better in that part, that is, to extend it ſomwhat more than is neceſſarie, yet ſo, that you do not endanger the breaking of any muſcles, tendon or other nervous bodie. For that as *Hippocrates* write's, when as the muſcles are ſtrong and large, you may ſafely extend them, if ſo bee that you diſplace nothing by the force of the extenſion. If your hand will not ſuffice to make juſt extenſion, you muſt uſe the help of an Engine, ſuch as is our Pulley, faſtned to two poſts, ſo much of the rope beeing let forth, and drawn up again as ſhall ſuffice for the buſineſs in hand; in the performance whereof, it is fit that the patients friends abſent themſevs from this ſad ſpectacle, and that the Surgeon bee reſolute, and not deterred from his buſineſs by the lamentation, neither of the patient nor his friends. But for that wee write theſe things chiefly for the benefit of young practicioners, it ſeemeth meet, that haveing delivered theſe things in general, of reſtoring the thigh-bone, that wee run over theſe generalities in each particular, begining with that diſlocation which is made inwardly.

*Sect. 2. lib. de fract.*

## CHAP. XLIV.

### *Of reſtoreing the Thigh-bone diſlocated inwards.*

IT is fit to place the patient after the foreſaid manner, upon a table or bench, in the mid'ſt whereof ſhall ſtand faſtned a woodden pin of a foot's length, and as thick as the handle of a ſpade uſeth to bee; but it muſt bee wrapped about with ſom ſoft cloth, leſt the hardneſs hurt the buttocks, betwixt which it muſt ſtand, as wee

*Sect. 2. lib. de fract.* read that *Hippocrates* did in the extenſion of a broken leg. The wooden pin hath this uſe, to hold the bodie that it may not follow him that draweth or extendeth it; and that the extenſion beeing made as much as is requiſite, it may go between the *pertonæum* and the head of the diſlocated thigh. For thus there is no great need of counter-extenſion towards the upper parts; and beſides it helpeth to force back the bone into its cavitie, the help of the Surgeon concurring, who twining ſomwhiles to this, and otherwhiles to that ſide,

*How to make extenſion and counter-extenſion in this kinde of fracture.* doth direct the whole work. But when the extenſion hath need of counter-extenſion, then it is needful you have ſuch ligatures at hand, as wee have mentioned in the reſtoreing of a diſlocated ſhoulder, to bee drawn above the ſhoulder. One of theſe ſhall bee faſtned above the joint of the hip, and extended by a ſtrong man; another ſhall bee caſt above the knee by another with the like force. But if you cannot have a woodden pin, another ſtrong and like ligature ſhall bee put upon the joint directly at the hip, and held ſtiff by the hands of a ſtrong man, yet ſo that it my not touch the head of the thigh by preſſing it, for ſo it would

would hinder the reſtoring thereof. This manner of extenſion is common to four kindes of luxation of the thigh-bone. But the manner of forcing the bone into its cavitie muſt bee varied in each, according to the different condition of the parts whereunto the head incli-neth; to wit it muſt bee forced outwards if it bee fallen inwards, and contrarie in the reſt, as the kinde of the diſlocation ſhall bee. Som too clowniſh and ignorant knot-knitters faſten the lower ligature below the ankle, and thus the joints of the foot and knee are more extended then that of hip or huckle-bone, for they are neerer to the ligature, and conſequently to the active force: but they ought to do otherwiſe; therefore in a diſlocated ſhoulder you ſhall not faſten the ligatures to the hand or wreſt, but above the elbow. But if the hands ſhall not bee ſufficient for this work, then muſt you make uſe of engines. Wherefore then the patient being placed as is fit, and affected part firmly held, ſom round thing ſhall bee put into the groin, and the patient's knee, together with his whole leg ſhall bee drawn violently inwards, towards the other leg. And in the mean while the head of the thigh ſhall bee ſtrongly forced towards the cavitie of the huckle-bone, and ſo at length reſtored, as the following figure ſhew's.

Ligatures made for extenſion muſt bee faſtned neer the part to bee extended.

*A figure which manifeſteth the way of reſtoring the Thigh-bone diſlocated inwards.*

When the head of the Thigh by juſt extenſion is freed from the muſcles wherewith it was infolded, and the muſcles alſo extended that they may give way and yeeld themſelvs more pliant, then muſt the rope bee ſomwhat ſlacked, and then you muſt alſo deſiſt from extending, otherwiſe the reſtitution cannot bee performed, for that the ſtronger extenſion of the engine will reſiſt the hand of the Surgeon, thruſting and forceing it into the cavitie. This precept muſt bee obſerved in the reſtoring of this and other diſlocations. You ſhall know that the thigh is reſtored by the equalitie of the legs, by the free and painleſs extenſion and inflection of the lame leg. Laſtly, by the application of agglutinative medicines (whereof wee have formerly ſpoken) the reſtored bone ſhall bee confirmed in its place; to which purpoſe ligation ſhall bee made, the ligature beeing firſt caſt upon the place whereinto the head of the thigh fell, and thence brought to the oppoſite or ſound ſide by the belly and loins. In the mean while the cavitie of the groin muſt bee filled with ſomwhat a thick bolſter which may keep the head of the bone in the cavitie. Neither muſt you omit junks ſtretched down even to the ankles, as wee have obſerved in the fracture of the thigh. Then muſt both the thighs bee bound together, whereby the diſlocated member may bee unmoovable, and more and more ſtrengthned. Neither muſt this dreſſing bee looſed, untill four or five daies bee paſſed, unleſs peradventure the ſudden happening of ſom other more grievous ſymptom ſhall perſwade otherwiſe. To conclude, the patient muſt bee kept in his bed for the ſpace of a month, that the relaxed muſcles, nervs, and ligaments may have ſpace to recover their former ſtrength, otherwiſe, there is danger leſt the bone may again fall out by the too forward and ſpeedy walking upon it. For the ſite of the thigh it muſt be placed and kept in a middle figure, yet this middle figure conſiſt's in the extenſion, not in the flexion, as it is demonſtrated by *Hippocrates*, for that ſuch a figure is accuſtomable to the leg.

A general precept.

*Sect. 2. lib. de fract.*

## CHAP. XLV.

### *Of reſtoreing the Thigh diſlocated outwardly.*

THe patient muſt bee placed groveling upon a table in this kinde of diſlocation alſo, and ligatures as before, caſt upon the hip and lower part of the thigh, then extenſion muſt

bee made downwards, and counter-extenſion upwards; then preſently the head of the bone muſt bee forced by the hand of the Surgeon into its place. If the hand bee not ſufficient for this purpoſe, our pulley muſt bee uſed, as the following figure ſheweth.

*A figure which expreſſeth the manner of reſtoreing the thigh luxated outwards.*

When it is that onely extenon ſervs for the reſtoring the diſlocated Thigh.

This kinde of diſlocation is the eaſilieſt reſtored of all theſe which happen in the thigh or hip, ſo that I have diverſ times obſerved the head of the thigh to have been drawn back into its cavitie by the onely regreſs of the extended muſcles into themſelvs towards their originals, ſomwhiles with a noiſ or pop, otherwhiles without, which beeing don, laying a compreſs upon the joint, you ſhall perform all other circumſtances as before in an internal diſlocation.

## CHAP. XLVI.

*Of reſtoreing the Thigh diſlocated forwards.*

When the Thigh is luxated forwards, the patient muſt bee laid upon his ſound ſide, and tied as wee have formerly delivered. Then the Surgeon ſhall lay a bolſter upon the prominent head of the bone, and have a care that his ſervant firmly hold it: then immediately juſt extenſion beeing made, hee ſhall with his hand force the bone into the cavitie; but if his hand will not ſerv, hee ſhall attempt it with his knee. Then to conclude, hee ſhall uſe the reſt of the things formerly mentioned to contain the reſtored bone.

## CHAP. XLVII.

*Of reſtoreing the Thigh diſlocated backwards.*

The patient ſhall bee placed groveling upon a table or bench, and the member extended, as in the reſt, one ligature ſtretched from the groin, another from the knee; then the Surgeon ſhall endeavor to force back with his hand that which ſtand's up, and alſo to draw away the knee from the ſound leg. The bone thus placed and reſtored, the cure require's nothing elſ than to bee bound up and kept long in bed, leſt that the Thigh, if it ſhould bee moved, the nervs beeing yet more looſ, might again fall out. For the thigh is in great danger of relapſ, for that the cavitie of the huclebone is onely depreſt, as far as it goe's in, and the burden of the hanging or adjoining thigh is heavie.

## CHAP. XLVIII.

*Of the diſlocation of the Whirl-bone of the knee.*

The Whirl-bone of the knee may fall forth into the inner, outer, upper and lower part; but never to the hind-part, becauſ the bones which it cover's do not ſuffer it. To reſtore it, the patient muſt ſtand with his foot firmly upon ſom even place, and then the Surgeon muſt force and reduce it with his hands from the part into which it is preternaturally

naturally ſlidden. When it ſhall bee reſtored, the cavitie of the ham ſhall bee filled up with bolſters ſo that hee may not bend his leg, for if it bee bended, there is no ſmal danger of the falling back of the whirl-bone. Then a caſe or box ſhall bee put about it, on the ſide eſpecially whereto it fell, beeing made ſomwhat flat and round reſembling the whirl-bone it ſelf, and it ſhall bee bound on with ligatures, and medicines ſo faſt that it may not ſtir a jot. After the part ſhall ſeem to have had ſufficient reſt, it is fit that the patient trie and accuſtom by little and little to bend his knee, until at length hee ſhall finde that hee may eaſily and ſafely moov that joint.

## CHAP. XLIX.

*Of the diſlocated Knee.*

THe Knee alſo may bee diſlocated three manner of waies, that is, into the inner, outer, and hind-part, but very ſeldom towards the fore-ſide, and that not without ſom grievous and forcible violence; for the whirl-bone lying upon it, hinder's it from ſlipping out, and hold's it in. The other waies are eaſie, becauſ the cavitie of the leg-bone is ſuperficiarie aud very ſmooth, but the cavitie of the lower end of the thigh-bone is made in the manner of a ſpout or gutter, and beſides the head thereof is verie ſmooth and ſlipperie; but the whole joint is much more lax than the joint of the Elbow: ſo that as it may bee the more eaſily diſlocated, ſo may it the beter bee reſtored; and as it may bee the more eaſily, ſo may it bee the more ſafely diſlocated, for that inflammation is leſs to bee feared here, as it is obſerved by *Hippocrates*. Falls from high, leaping, and too violent runing are the cauſes of this diſlocation. The ſign thereof is the diſabilitie of bending or lifting up the leg to the thigh, ſo that the patient cannot touch his buttock with his heel. The diſlocation of the knee which is inwardly and outwardly, is reſtored with indifferent extenſion and forceing of the bones into their ſeats from thoſe parts whereunto they have fallen. But to reſtore a diſlocation made backwards, the patient ſhall bee placed upon a bench of an indifferent height, ſo that the Surgeon may bee behinde him who may bend with both his hands and bring to his buttocks the patients leg put between his legs. But if the reſtitution do not thus ſucceed, you muſt make a clew of yarn, and faſten it upon the mid'ſt of a ſtaff, let one put this into the cavitie of his ham, upon the place whereas the bone ſtand's out, and ſo force it forwards; then let another caſt a ligature of ſom three fingers bredth upon his knee, & draw it upwards with his hands, then preſently & at once they ſhal ſo bend & crook the lame leg that the heel thereof may touch his buttocks.

The differences.

*Ad finem ſect. 3. de fract.*

How to reſtore a knee diſlocated backwards.

## CHAP. L.

*Of a Knee diſlocated forwards.*

BUt if the Knee bee diſlocated forwards (which ſeldom happen's) the patient ſhall bee placed upon a table and aconvenient ligation made aboov, and another cloſe beneath the knee. Then the Surgeon ſhall ſo long preſs down with both his hands the bone which is out of joint, until it ſhall return to its place again. To which purpoſe if the ſtrength of the hand wil not ſerv to make juſt extenſion each way you may make uſe of our engine, as you may perceiv by this following figure.

The cure.

*A figure ſhewing the manner of reſtoreing a Knee diſlocated forwards.*

You ſhall know that the bone is reſtored by the free and painleſs extenſion of the leg; then

then will there bee place for medicines, bolſters and ſtrengthening ligatures. In the mean ſpace the patient ſhall forbear going ſo long as the part ſhall ſeem to require,

## CHAP. LI.

*Of the ſeparation of the greater and leſſer Focile.*

The joining of the leg and ſhin-bones.

THe *Fibula* or leſſer Focile is faſtned and adhere's to the *Tibia*, leg-bone, or greater Focile without any cavitie, above at the knee and below at the ankle. But it may bee pluck't or drawn aſide three manner of waies, that is, forwards, and to each ſide: this chance happen's when in going wee take no ſure footing, ſo that wee ſlip with our feet this way and that way as in a ſlipperie place, and ſo wreſt it inwards or outwards; for then the weight of our bodie lying open upon it, draw's the leg, as it were, in ſunder, ſo that the one Focile is diſlocated or ſeparated from the other. The ſame may happen by a fall from an high place, or ſom grievous and bruiſing blow: beſides alſo, their appendices are ſomtimes ſeparated from them. For the reſtoreing of all theſe into their proper places, it is fit they bee drawn and forced by the hand of the Surgeon into their ſeats: then ſhall they bee ſtraitly bound up, putting compreſſes to that part unto which the *Fibula* flew; beginning alſo your ligation at the very luxation, for the fore-mentioned reaſons. The patient ſhall reſt fortie daies, to wit, as long as ſhall bee ſufficient for the ſtrengthening of the ligaments.

The cure.

## CHAP. LII.

*Of the Leg-bone or greater Focile diſlocated and divided from the Paſtern-bone.*

Differences and ſigns.

ALſo the Leg-bone is ſomtimes diſlocated and divided from the Paſtern-bone, as wel inwardly, as outwardly; which may bee known by the ſwelling out of the bone to this or that part; if it bee onely a ſubluxation or ſtrain, it may bee eaſily reſtored, by gently forceing it into the place again. After the bone ſhal bee reſtored, it ſhall bee kept ſo by compreſſes and fit deligation, by croſs and contrarie bindeing to the ſide oppoſite to that towards which the bone fell, that ſo alſo in ſom meaſure it may bee more and more forced into its place. In the mean time you muſt have a care that you do not too ſtraitly preſs the great and large tendon which is at the heel. This kinde of diſlocation is reſtored in fortie daies, unleſs ſom accident happen which may hinder it.

## CHAP. LIII.

*Of the diſlocation of the Heel.*

Cauſes and differences.

WHoſoever leaping from an high place have fallen very heavie upon their heel, have their heel diſlocated and divided from the paſtern-bone. This diſlocation happen's more frequently inwardly than outwardly, becauſ the prominencie of the leſſer Focile embrace's the paſtern-bone; whence it is, that there it is more ſtraitly and firmly knit. It is reſtored by extenſion and forceing it in, which will bee no very difficult matter, unleſs ſom great defluxion or inflammation hinder it. For the bindeing up, it muſt beee ſtraiteſt in the part affected, that ſo the blood may bee preſſed from thence iuto the neighboring parts; yet uſing ſuch a moderation, that it may not bee painful, nor preſs more ſtraitly than is fit, the nervs and groſs tendon which run's to the heel. This diſlocation is not confirmed before the fortieth day, though nothing happen which may hinder it. Yet uſually it happeneth that many ſymptoms enſue by the vehemencie of the contuſion. Wherefore it will not be amiſs to handle them in a particular chapter.

The cure.

## CHAP. LIV.

*Of the Symptoms which follow upon the contuſion of the Heel.*

Why blood-letting neceſſarie in the fracture of a heel.

*Hip. ſect. 3. de fracturis.*

IT happeneth by the vehemencie of this contuſion, that the veins and arteries do as it were vomit up blood both through the ſecret paſſages of their coats, as alſo by their ends or orifices, whence an *Ecchymoſis* or blackneſs over all the heel, pain, ſwelling, aud other the like enſue, which implore remedies and the Surgeon's help, to wit, convenient diet, and drawing of blood by opening a vein, (of which though *Hippocrates* make's no mention, yet it is here requiſite by reaſon of the Feaver and inflammation) and if need require, purgation; principally ſuch as may divert the matter by cauſing vomit, and laſtly,

the

the application of local medicines, chiefly ſuch as may ſoften and rarifie the skin under the heel, otherwiſe uſually hard and thick (ſuch as are fomentations of warm water and oil) ſo that divers times wee are forced to ſcarifie it with a lancet, ſhunning the quick fleſh. For ſo at length the blood poured forth into the part, and there heaped up, is more eaſily attenuated, and at length reſolved. But theſe things muſt all be performed before the inflammation ſeiz upon the part, otherwiſe there will be danger of a convulſion. For the blood, when it fall's out of the veſſels, readily putrefies, by reaſon the denſitie of this part hinder's it from ventilation & diſperſing to the adjacent parts. Hereto may be added, that the large and great tendon which cover's the heel, is endued with exquiſite ſenſ, & alſo the part it ſelf is on everie ſide ſpred over with many nervs. Beſides alſo there is further danger of inflammation by lying upon the back and heel, as wee before admoniſhed you in the Fracture of a leg. Therefore I would have the Surgeon to bee heer moſt attentive and diligent to perform theſe things which we have mentioned, leſt by inflammation a Gangrene and Mortification (for heer the ſanious fleſh preſently fall's upon the bone) happen together with a continued and ſharp Fever, with trembling, hicketting and raveing. For the corruption of this part firſt by contagion aſſail's the next, and thence a Fever aſſail's the heart by the arteries preſſed and growing hot by the putrid heat, and by the nervs and that great and notable tendon made by the concourſ of the three muſcles of the calf of the leg, the muſcles, brain and ſtomach are evilly affected and drawn into conſent, and ſo cauſ convulſions, raveing and a deadlie hicketting.

Why the heel is ſubject to inflammation.

*Gal. ad ſent. 23. ſect. 2. lib. de fract.*

## CHAP. LV.

*Of the diſlocated Paſtern, or Ancle-bone.*

THe *Aſtragalus* or Paſtern bone may bee diſlocated and fall out of its place to everie ſide. Wherefore when it fall's out towards the inner part, the ſole of the foot is turned outwards, when it flie's out to the contrarie, the ſign is alſo contrarie; if it bee diſlocated to the foreſide, on the hinde ſide the broad tendon coming under the heel is hardened and diſtended; but if bee luxated backwards, the whole heel is as it were hid in the foot: neither doth this kinde of diſlocation happen without much violence. It is reſtored by extending it with the hands, and forcing it into the contrary part to that from whence it fell. Beeing reſtored it is kept ſo by application of medicines and fit ligation. The patient muſt keep his bed long in this caſe, leſt that bone which ſuſtain's and bear's up the whole bodie, may again ſink under the burden, and break out, the ſinews beeing not well knit and ſtrengthened.

Sign.

Cure.

## CHAP. LVI.

*Of the diſlocation of the In-ſtep and back of the foot.*

THe bones alſo of the In-ſtep and back of the foot may bee luxated, and that either upwards or downwards, or to one ſide, though ſeldom ſidewiſe, for the reaſon formerly rendred, ſpeaking of the diſlocation of the like bones of the hand. If that they ſtand upwards, then muſt the patient tread hard upon ſom plain or even place, and then the Surgeon by preſſing them with his hand ſhall force them into their places; on the contrary, if they ſtand out of the ſole of the foot, then muſt you preſs them thence upwards, and reſtore each bone to its place. They may bee reſtored after the ſame manner if they bee flown out to either ſide. But you muſt note, that although the Ligatures conſiſt but of one head in other diſlocations, yet here *Hippocrates* would have ſuch uſed as have two heads, for that the diſlocation happen's more from below upwards, or from above downwards, then ſidewiſe.

Cure.

*Sent. 14. ſect. 2. lib. de fract.*

## CHAP. LVII.

*Of the diſlocation of the Toes.*

NOw the Toes may bee four waies diſlocated, even as the fingers of the hand; and they may bee reſtored juſt after the ſame manner, that is, extend them directly forth, and then force each joint into its place, and laſtly, binde them up as is fitting. The reſtitution of all them is eaſie, for that they cannot far tranſgreſs their bounds. To conclude, the bones of the feet are diſlocated and reſtored by the ſame means as thoſe of the hands, but that when as any thing is diſlocated in the foot, the patient muſt keep his bed; but when any thing is amiſs in the hand, hee muſt carrie it in a ſcarf. The patient muſt reſt twenty daies, that is, until hee can firmly ſtand upon his feet.

The differences.

Cure.

CHAP.

## CHAP. LVIII.

*Of the ſymptoms, and other accidents which may befal a broken or diſlocated member.*

MAnie things may befal broken or diſlocated members by the means of the fracture or diſlocation; ſuch as are bruiſes, great pain, inflammation, a fever, impoſtume, gangrene, mortification, ulcer, *fiſtula*, and *atrophia*, all which require a skilfull and diligent Surgeon for their cure. A contuſion happen's by the fall of ſom heavie thing upon the part, or by a fall from high, whence follow's the effuſion of blood poured out under the skin: which if it bee poured forth in great plentie, muſt bee ſpeedily evacuated by ſcarification, and the part eaſed of that burthen, leſt it ſhould thence gangrenate. And by how much the blood ſhall appear more thick, and the skin more denſ, by ſo much the ſcarification ſhall be made more deep. You may alſo for the ſame purpoſe applie Leeches.

Remedies for a contuſion.

What may happen by pain.

Concerning pain wee formerly ſaid, that it uſually happen's by reaſon that the bones are mooved out of their places, whence it happeneth that they becom troubleſom to the muſcles and nervs, by pricking and preſſing them. Hence enſue inflammations, as alſo impoſtumation and a fever, oft times a gangrene, and in concluſion a mortification corrupting and rotting the bones; otherwhiles a ſinuous ulcer or *fiſtula*. But an *atrophia* and leanneſs ariſeth by the ſloth and idleneſs of the member decaying all the ſtrength thereof, and by too ſtraight ligation intercepting the paſſages of the blood, otherwiſe readie to fall and flow thither.

Remedies for the leanneſs or *Atrophia* of any member.

Now the leanneſs which is occaſioned by too ſtraight ligation receive's cure by the ſlackning of the ligatures wherewith the member was bound. That which proceed's from idleneſs, is helped by moderate exerciſe, by extending, bending, lifting up, and depreſſing the member, if ſo bee that hee can away with exerciſe. Otherwiſe hee ſhall uſe frictions and fomentations with warm water. The frictions muſt be moderate in hardneſs and gentleneſs, in length and ſhortneſs. The ſame moderation ſhall be obſerved in the warmneſs of the water, and in the time of fomenting. For too long fomenting reſolv's the blood that is drawn. But that which is too little or ſhort a ſpace draw's little or nothing at all: after the fomentation, hot and emplaſtick medicines made of pitch, turpentine, *euphorbium*, pellitorie of Spain, ſulphur, and the like, ſhall bee applied. They ſhall bee renued everie day more often or ſeldom, as the thing it ſelf ſhall ſeem to require.

What meaſure to bee uſed in fomenting.

A *dropax*.

Theſe medicines are termed *Dropaces*, whoſe form is thus: ℞ *picis nigræ, ammoniaci, bdelii, gummi elemi in aquâ vitæ diſſolutorum an.* ℥ii. *olei laurini* ℥i. *pulveris piperis, zinziberis, granorum paradiſi, baccarum lauri & juniperi, an.* ℥ii. *fiat emplaſtrum ſecundùm artem, extendatur ſuper alutam.*

Bindeing of the ſound part oppoſite to the emaciated.

It is alſo good to binde about the oppoſite ſound part with a ligature, yet without pain; as if the right arm ſhall decay for want of nouriſhment, the left ſhall bee bound, beginning your ligation at the hand, and continuing it to the arm-pit. If this miſchance ſhall ſeiz upon the right leg, then the left ſhall bee ſwathed up from the ſole of the foot to the groin. For thus a great portion of the blood is forced back into the *vena cava*, or hollow vein, and from this being diſtended and over full, into the part affected and gapeing with the veſſels almoſt emptie; beſide alſo it is convenient to keep the ſound part in reſt, that ſo it may draw the leſs nouriſhment, and by that means there will bee more ſtore to refreſh the weak part.

How to binde up the emaciated part.

Som wiſh alſo to binde up the decaying member with moderate ligation; for thus, ſay they, the blood is drawn thither: for when as wee intend to let blood by opening a vein with a lancet, wee binde the arm. Alſo it is good to dip it into water ſomwhat more then warm, and hold it there until it grow red, and ſwell; for thus blood is drawn into the veins, as they finde, which uſe to draw blood of the *ſaphena* and *ſalvatella*. Now, if when as theſe things and the like bee don, the lame part grow's hot, red and ſwollen, then know that health is to bee hoped for; but if the contrarie happen, the caſe is deſperate: wherefore you need attempt nothing further.

Signs that an *Atrophia* is cureable.

Furthermore, there is ſomtimes hardneſs left in the joints, after fractures and diſlocations are reſtored. It is fit to ſoften this, by reſolving the contained humor by fomentations, liniments, cataplaſms, emplaſters made of the roots of marſh-mallows, brionie, lillies, line ſeed, fenugreek ſeed, and the like, and alſo of gums diſſolved in ſtrong vineger, as *ammoniacum, bdelium, opopanax, labdanum, ſagapenum, ſtyrax liquida*, and *adeps anſerinus, gallinaceus, humanus, oleum liliorum*, and the like. Alſo you muſt wiſh the patient to moov the part ever now and then, everie day, yet ſo, that it bee not painful to him, that ſo the pent up humor may grow hot, bee attenuated, and at length diſcuſſed, and laſtly, the part it ſelf reſtored as far as art can perform it; for oft-times it cannot bee helped any thing at all. For if the member bee weak and lame, by reaſon that the fracture happened neer the joint, for the reſidue of his life the motion thereof uſeth to bee painful and difficult, and oft-times none at all, eſpecially if the *callus*, which grow's there, bee ſomwhat thick and great; and laſtly, if the joint it ſelf ſhall bee contuſed and broken by the ſtroke, as it oft-times happen's in wounds made by gun-ſhot.

OF

# Of diverſ other PRETER-NATURAL AFFECTS, whoſe cure is commonly performed by Surgerie.

## The Seventeenth Book.

### CHAP. I.

*Of an* Alopecia, *or the falling away of the hairs of the head.*

AN *Alopecia is* the falling away of the hair of the head, and ſomtimes alſo of the eie-brows, chin and other parts; the French commmonly call it the *Pelade:* Phyſicians term it the *Alopecia*, for old Foxes (ſubject, by reaſon of their age to have the ſcab) are troubled oft-times with this diſeaſ. This affect is cauſed either through defect of nouriſhment fit to nouriſh the hairs, as in old age through want of the radical humiditie, or by the corruption of the alimentarie matter of the ſame, as after long Fevers, in the *Lues venerea*, Leproſie, the corruption of the whole bodie and all the humors, whence follow's a corruption of the vapors and fuliginous excrements; or elſ by the vitious conſtitution of pores in the skin in raritie, and conſtriction or denſitie, as by the too much uſe of hot ointments made for coloring the hair, or ſuch as are uſed to take off hair, therefore called *Depilatoria*, or by the burning of the skin, or loſs thereof, haveing a ſcar in ſtead thereof, by reaſon of whoſe denſitie the hair cannot ſpring out; as by too much laxitie the fuliginous matter of the hair ſtaie's not, but preſently vaniſheth away. The *Alopecia* which com's by old age, a conſumption, burn-baldneſs, leproſie, a ſcald head, is incureable: that which admit's of cure, the cauſ beeing taken away, is helped. Wherefore if it proceed from the corruption of humors, let a Phyſician bee called, who, as hee ſhall think it fit, ſhall appoint diet, purgeing and phlebotomie. Then the Surgeon ſhall ſhave off the hair which is remaining, and ſhall firſt uſe reſolving fomentations, applie Leeches and Horns to digeſt the vitious humor which is under the skin, then ſhall hee waſh the head to take away the filth with a Lee wherein the roots of Orris and Aloës have been boiled. Laſtly, hee ſhall uſe both attractive fomentations and medicines for to draw forth the humor which is becom laudable in the whole bodie by the benefit of diet fitly appointed. But if the *Alopecia* ſhall happen through defect of nouriſhment, the part ſhall bee rubbed ſo long with a courſ linnen cloth, or a fig-leaf, or onions until it wax red; beſides alſo the skin ſhall bee pricked in many places with a needle, and then ointments applied made of *Labdanum*, pigeons dung, ſtaves-acre, oyl of bayes, turpentine and wax, to draw the blood and matter of the hairs. If the hair bee loſt by the *Lues venerea*, the patient ſhall bee anointed with quick-ſilver to ſufficient ſalivation. To couclude, as the cauſes of this diſeaſ ſhall bee, ſo muſt the remedies bee fitted which are uſed.

*Gal. c. 2. lib. 1. de comp. med. ſecun. locos.*

The cauſ.

What *Alopecia* uncureable.

What cureable, and how.

" σαφὶς ἄγεια

### CHAP. II.

*Of the* Tinea, *or Scald-head.*

THe *Tinea* (let mee ſo term it in Latine, whil'ſt a fitter word may bee found) or a Scald-head, is a diſeaſ poſſeſſing the muſculous skin of the head or the hairie ſcalp, and eating thereinto like a moth. There are three differences thereof; the firſt is called by *Galen ſcalie or bran-like*, for that whil'ſt it is ſcratched it caſt's manie bran-like ſcales: ſom Practitioners term it *a drie ſcall*, becauſ of the great aduſtion of the humor cauſing it. Another is called *Ficoſa, a fig-like ſcall*, becauſ when it is deſpoiled of the cruſt or ſcab which is yellow, there appear's grains of quick and red fleſh, like to the inner ſeeds or grains of figs, and caſting out a bloodie matter. *Galen* name's the third *Achor*, and it is alſo vulgarly termed the *corroſive or ulcerous ſcall*, for that the many ulcers

*Lib. 1. de comp. med. ſect. locos.*

cers wherewith it abound's are open with manie ſmall holes flowing with liquid *ſanies* like the waſhing of fleſh, ſtinking, corrupt and carrion-like, ſomwhiles livid, ſomwhiles yellowiſh. Theſe holes, if they bee ſomwhat larger, make another difference which is called *Cerion* or *Favoſa*, (that is, like a honie-comb) becauſ as *Galen* think's, the matter which floweth from theſe, reſembleth honie in color and conſiſtence. They all proceed of an humore which is more or leſs vitious, for a leſs corrupt humor cauſeth a ſcalie, a more corrupt; the fig-like, but the moſt corrupt produceth the ulcerous. If it ſhall happen to an infant by reaſon of the fault and contagion of the nurſ, or elſ preſently after it is born, it ſcarce admit's of cure; neither muſt wee attempt that, before the childe com to that age that hee may bee able to endure the cure and medicines. But you may in the mean while applie the leavs of Colworts or Beets beſmeared with freſh butter, or other gentle medicine haveing a facultie to mollifie and open the paſſage for the ſhut-up matter. Thoſe who are of ſufficient age to away with medicine, may bleed, purge, bathe, according to art by the advice of a Phyſician. For local medicines in a ſcalie ſcall, ſoftening and diſcuſſing fomentations ſhall bee appointed, made of the roots of marſh-Mallows, Lillies, Docks, Sorrel boiled in lee with a little vineger added thereto. The head ſhall bee twice in a day fomented with ſuch a decoction, and on the ſixth day the hair beeing ſhaven off, it ſhall bee ſcarified, and then leeches & horns put to it ſo ſcarified. Then it ſhal bee forthwith anointed with oyl of ſtaves-acre mixed with black ſope, both to draw and repreſs the malignitie of the humor impa'ct in the part. You may alſo uſe the following medicine even to the perfect cure of the diſeaſ, as that which is much commended in this kinde of diſeaſ by *Vigo*, *Gordonius* and *Guido*; it is thus made. ℞ *elleb. albi & nigri, atrament. auripigmenti, litharg yri auri, calcis vivæ, vitriol. alum. galla. fulig. ciner. fæcis vini uſti, an* ℥ ß. *argenti vivi extincti,* ʒiii. *æruginis æris* ʒii. *fiat pulvis qui incorporetur cum ſucco boraginis, ſcabioſæ, fumariæ, oxylapathi, aceti, an. quart.* i. *olei antiqui lib.* i. *bulliant uſque ad conſumpt. ſuccorum, in fine decoctionis cineres ponantur, addendo picis liquidæ* ℥ ß. *ceræ quantum ſufficit, fiat unguentum:* Theſe autors teſtifie that this will heal any kinde of ſcall. Certainly none can diſ-allow of it who well conſidereth the ingredients and compoſure thereof.

A cruſtie alſo or fig-like ſcall ſhall bee ſo long fomented with the preſcribed fomentation, until the cruſts or ſcabs fall off, yet there is nothing ſo good and effectual as Creſſes beaten or fried with hog's ſuet. For it will make it fall off in the ſpace of four and twentie hours, beſides, if it bee continued it will heal them throughly, as I have known by experience, and reaſon alſo ſtand's therewith; for according to *Galen*, Creſſes are hot and drie. When the cruſts ſhall bee fallen away, the parts affected ſhall bee anointed with the formerly preſcribed ointment. I have cured manie with a little oyl of vitriol, and ſomtimes alſo with *Ægyptiacum* made ſomwhat more ſtrong then ordinarie. But if the root of the hairs appear rotten, they ſhall bee plucked out one by one; yet if ſuch putrefaction ſhall poſſeſs the whole hairie ſcalp, and trouble all the roots of the hair, that you may pluck them out the more readily, and with leſs pain, you may beſmear a cotten-cloth on the rougher ſide with this following medicine. ℞ *picis nigræ* ʒvi. *picis ref.* ʒii. *pul. viridis æris, & vitriol. rom. an.* ʒi. *vel* ℥ ß *ſulphur. viv.* ℥ ß. *coquantur omnia ſimul in aceti acerrimi quantitate ſufficiente, fiat medicamentum ad uſum:* let it bee applied to the head, and remain on for two daies; then let it bee quickly and forcibly plucked away againſt the hair, that ſo the hairs ſticking to the plaiſter may by that means bee plucked away therewith: you ſhall uſe this medicine ſo long as need ſhall ſeem to require.

For the third kinde of Scall which is termed a Corroſive or Ulcerous, the firſt indication is to cleanſ the ulcers with this following ointment. ℞ *unguenti enulati cum mercurio duplicato, ægyptiaci, an.* ʒiii. *vitriol. albi in pulverem redacti* ʒi. *incorporentur ſimul, fiat unguentum ad uſum*; alſo you may uſe the formerly deſcribed ointment. But if any pain or other accident fall out, you muſt withſtand it by the aſſiſtance and direction of ſom good Phyſician; verily theſe following medicines againſt all kindes of Scalls have been found out by reaſon, and approoved by uſe. ℞ *Camphur.* ℥ ß. *alum. roch. vitriol. vir. æris, ſulph. vivi, fulig. forn. an.* ʒvi. *olei amygd. dulcium & axungiæ porci, an.* ʒii. *incorporentur ſimul in mortario, fiat unguentum.* Som take the dung which lieth rotting in a ſheep-fold; they uſe that which is liquid, and rub it upon the ulcerated places, and lay a double cloth dipped in that liquor upon it. But if the patient cannot bee cured with all theſe medicines, and that you finde his bodie in ſom parts thereof troubled in like ſort with cruſtie ulcers, I would wiſh that his head might bee anointed with an ointment made of *Axungia, argentum vivum*, and a little *Sulphur*, and then fit ſom *emplaſtrum Vigonis cum mercurio* into the faſhion of a cap; alſo ſom plaiſters of the ſame may bee applied to the ſhoulders, thighs and legs, and ſo let him bee kept in a verie warm chamber, and all things don as if hee had the *Lues venerea*. This kinde of cure was firſt (that I know of) attempted by *Simon Blanch* the King's Surgeon, upon a certain young man, when as hee in vain had diligently tried all other uſual medicines. A ſcalled head oft-times appeareth verie loathſom to the eie, caſting forth virulent and ſtinking *ſanies*; at the firſt it is hardly cured, but being old, far more difficultly. For diverſ times it breaketh out afreſh, when you think it kill'd, by reaſon of the impreſſion of the malign putrefaction remaining in the part, which wholly corrupt's the temper thereof. Moreover, oft-times beeing healed, it hath left an

*Alopecia*

*Cap. 8. lib. citati.*

The cure.

For a ſcalie ſcall.

An ointment for a ſcolled head.

The cure of a cruſtie ſcall.

A poultis of Creſſes.

*Lib. 7. ſimpl.*

A plaiſter to pluck away the hair at once.

The cure of an ulcerous ſcall.

A contumacious ſcall muſt bee cured as wee cure the *Lues venerea.*

*Alopecia* behinde it, a great ſhame to the Surgeons. Which is the reaſon, that moſt of them judg it beſt to leav the cure thereof to Empericks and women.

## CHAP. III.

### *Of the* Vertigo, *or giddineſs.*

THe *Vertigo* is a ſudden darkning of the eies and ſight by a vaporous and hot ſpirit which aſcendeth to the head by the ſleepie arteries, and fil's the brain, diſturbing the humors and ſpirits which are contained there, and toſſing them unequally, as if one ran round, or had drunk too much wine. This hot ſpirit oft-times riſeth from the heart upwards by the internal ſleepie arteries to the *Rete mirabile*, or wonderful net; otherwhiles it is generated in the brain it ſelf, beeing more hot then is fitting; alſo it oft-times ariſeth from the ſtomack, ſpleen, liver and other entrals beeing too hot. The ſign of this diſeaſe is the ſudden darkning of the ſight, and the cloſing up as it were of the eies, the bodie beeing lightly turned about, or by looking upon wheels runing round, or whirle-pits in waters, or by looking down anie deep or ſteep places. If the original of the diſeaſ proceed from the brain, the patients are troubled with the head-ach, heavineſs of the head, and noiſ in the ears, and oft-times they loſe their ſmell. *Paulus Ægineta* for the cure bid's us to open the arteries of the temples. But if the matter of the diſeaſ ariſe from ſom other place, as from ſom of the lower entrals, ſuch opening of an arterie little availeth. Wherefore then ſom skilful Phyſitian muſt bee conſulted with, who may give directions for phlebotomie, if the original of the diſeaſ proceed from the heat of the entrals; by purging, if occaſioned by the foulneſs of the ſtomack. But if ſuch a *Vertigo* bee a critical ſymptom of ſom acute diſeaſ affecting the *Criſis* by vomit or bleeding, then the whole buſineſs of freeing the patient thereof muſt bee committed to nature.

What the *Vertigo* is, and the cauſes thereof.

The Signs.

*Lib. 6.*

A critical *Vertigo.*

## CHAP. IV.

### *Of the* Hemicrania, *or Megrim.*

THe *Megrim* is properly a diſeaſ affecting the one ſide of the head, right, or left. It ſomtimes paſſeth no higher then the temporal muſcles, otherwhiles it reacheth to the top of the crown. The cauſ of ſuch pain proceedeth either from the veins and external arteries, or from the *meninges*, or from the verie ſubſtance of the brain or from the *pericranium*, or the hairie ſcalp covering the *pericranium*, or laſtly, from putrid vapors ariſing to the head from the ventricle, womb, or other inferior member. Yet an external cauſ may bring this affect, to wit, the too hot or cold conſtitution of the encompaſſing air, drunkenneſs, gluttonie, the uſe of hot and vaporous meats, ſom noiſom vapor or ſmoak, as of Antimonie, quick-ſilver, or the like, drawn up by the noſe, which is the reaſon that gold-ſmiths, and ſuch as guild metals are commonly troubled with this diſeaſ. But whenceſoever the cauſ of the evil proceedeth, it is either a ſimple diſtemper, or with matter: with matter, I ſay, which again is either ſimple or compound. Now, this affect is either alone, or accompanied with other affects, as inflammation and tenſion. The heavineſs of head argue's plentie of humor; pricking, beating and tenſion ſhew's that there is a plentie of vapors mixed with the humors, and ſhut up in the nervous, arterious, or membranous bodie of the head. If the pain proceed from the inflamed *meninges*, a fever followeth thereon, eſpecially, if the humor cauſing pain do putrefie. If the pain bee ſuperficiarie, it is ſeated in the *pericranium*. If profound, deep and piercing to the bottom of the eies, it is an argument that the *meninges* are affected, and a feaver enſue's, if there bee inflammation, and the matter putrefie; and then oft-times the tormenting pain is ſo great and grievous, that the patient is afraid to have his head touched, if it bee but with your finger, neither can hee away with anie noiſ, or ſmall murmuring, nor light, nor ſmels however ſweet, no nor the fume of Wine. The pain is ſomtimes continual, otherwhiles by fits. If the cauſ of the pain proceed from hot, thin and vaporous blood, which will yeeld to no medicines, a verie neceſſarie, profitable and ſpeedie remedie may bee had by opening an arterie in the temples, whether the diſeaſ proceed from the internal or external veſſels. For, hence alwaies enſueth an evacuation of the conjunct matter, blood and ſpirits. I have experimented this in manie, but eſpecially in the Prince de la *Roche-ſur-you*. His Phyſicians, when hee was troubled with this grievous Megrim, were *Chaplain*, the King's, and *Caſtellane* the Queen's chief Phyſicians, and *Lewes Duret*, who notwithſtanding could help him nothing by blood-letting, cupping, bathes, frictions, diet or anie other kinde of remedie either taken inwardly or applied outwardly. I beeing called, ſaid, that there was onely hope one way to recover his health, which was to open the arterie of the temple in the ſame ſide that the pain was; for I thought it probable, that the cauſ of his pain was not contained in the veins, but in the arteries, in

The differences.

In what kinde of *Megrim* the opening of an Arterie is good.

A Hiſtorie.

which caſe by the teſtimonie of the antients, there was nothing better then the opening or bleeding of an arterie, whereof I have made trial upon my ſelf to my great good. When as the Phyſicians had approoved of this my advice, I preſently betake my ſelf to the work, and chooſ out the arterie in the pained temple, which was both the more ſwoln and beat more vehemently then the reſt. I open this, as wee uſe to do in the bleeding of a vein, with one inciſion, and take more then two ſawcers of blood flying out with great violence, and leaping; the pain preſently ceaſed, neither did it ever moleſt him again. Yet this opening of an Arterie is ſuſpected by manie, for that it is troubleſom to ſtay the guſhing forth blood, and cicatrize the place, by reaſon of the denſitie, hardneſs and continual pulſation of the arterie; and laſtly, for that when it is cicatrized there may bee danger of an *Aneuriſma*. Wherefore they think it better firſt to divide the skin, then to ſeparate the arterie from all the adjacent particles, and then to binde it in two places; and laſtly divide it, as wee have formerly told you muſt beee don in *Varices*. But this is the opinion of men who fear all things where there is no cauſ; for I have learn't by frequent experience that the apertion of an arterie, which is performed with a Lancet, as wee do in opening a vein, is not at all dangerous; and the conſolidation or healing is ſomhat ſlower then in a vein, but yet will bee don at length, but that no flux of blood will happen, if ſo bee that the ligation be fitly performed, and remain ſo for four daies with fitting pledgets.

No danger in opening an arterie.

## CHAP. V.

*Of certain affects of the Eies, and firſt of ſtaying up the upper eie-lid when it is too lax.*

Differences.

OF the diſeaſes which befal the eies, ſom poſſeſs the whole ſubſtance thereof, as the *Ophthalmia*, a *Phlegmon* thereof: others are proper and peculiar to ſom parts thereof, as that which is termed *Gutta ſerena* to the optick nerv. Whence *Galen* made a threefold difference of the diſeaſes of the eies, as that ſom happened to the eie by hurting or offending the chief organ thereof; that is the cryſtalline humor; others by hindering the animal facultie, the chief cauſer of ſight, from entring into them; and laſtly, other ſom by offending the parts ſubſervient to the prime organ or inſtrument. Now of all theſe diſeaſes, the eie hath ſom of them common with the other parts of the bodie, ſuch as are an ulcer, wound, *Phlegmon*, contuſion and the like: other ſom are peculiar and proper to the eie, ſuch as are the *Egilops*, *Cataracta*, *Glaucoma*, and diverſ others of this kinde. Som have their upper eie-lid fall down, by reaſon that the upper skin thereof is relaxed more then is ſufficient to cover the eie, the griſtle in the mean while not relaxing it ſelf together therewith. Hence proceed's a double trouble; the firſt, for that the eie cannot bee eaſily opened, the other, becauſ the hairs of the relaxed eie-lid run in towards the eie, and becom troubleſom thereto by pricking it. The cauſ of ſuch relaxation is either a particular palſie of that part, which is frequent in old people, or the defluxion or falling down of a wateriſh humor, and that not acrid or biteing; which appear's by this, that thoſe who are thus affected have a rank of hairs growing under the natural rank, by reaſon of aboundance of heaped-up humor, as it is moſt probable. For thus a wet and mariſh ground hath the greateſt plenty of graſs. Now if this ſame humor were acrid, it would cauſ an itching, and conſequetly becom troubleſom to the patient, and it would alſo fret in ſunder and deſtroy the roots of the other hairs, ſo farre it is from yeelding matter for the preternatural generation of new. It is fit before you do any thing for the cure, that you mark with ink the portion there of which is ſuperfluous, and therefore to bee cut away, leaſt if you ſhould cut off more then is requiſite, the eye-lid ſhould remain turned up, and ſo cauſ another kinde of affect, which the antients have called *Ectropion*. Then the eie beeing covered, take and lift up with your fingers the middle part of the skin of the eie-lid, not takeing hold of the griſtle beneath it, and then cut it athwart, takeing away juſt ſo much as ſhall bee neceſſarie to make it as it were natural; laſtly, join the lips of the wound together with a ſimple ſuture of three or four ſtitches, that ſo it may bee cicatrized; for the cicatrization reſtrain's the eie-lid from falling down ſo looſly, at leaſt ſom part thereof beeing taken away. There ought to bee ſom meaſure and heed taken in the amputation, otherwiſe you muſt neceſſarily run into the one or other inconvenience, as if too much bee cut away, then the eie will not bee covered; if too little: then you have don nothing, and the patient is troubled to no purpoſe. If there ſhall bee manie hairs grown preternaturally, you ſhall pluck them away with an inſtrument made for the ſame purpoſe; then their roots ſhall bee burned with a gentle cauterie, the eie beeing left untouch't, for a ſcar preſently ariſeing will hinder them from growing again.

*Paul. Ægin. lib. 8. cap. 6.*

The cauſ.

The cure.

## CHAP. VI.

*Of* Lagophthalmus, *or the Hare-eie.*

SUch as have their eie-lids too ſhort, ſleep with their eies open, for that they cannot bee covered by the too ſhort skin of the eie-lids. the Greeks term this affect, Λαγόφθαλμος. The cauſ is either internal or external: internal, as by a Carbuncle, Impoſtume, or Ulcer; external, as by a wound made by a ſword, burn, fall, and the like. if this miſhap proceed by reaſon of a cicatrization, it is cureable, if ſo that the ſhort eie-lid bee of an indifferent thickneſs. But if it have been from the firſt conformation, or by ſom other means, whereby much of the ſubſtance is loſt, as that which happen's by burning, and a carbuncle, then it is uncureable. For the cure, you ſhall uſe relaxing and amollient fomentations, then the skin ſhall bee divided above the whole ſcar, in figure of an half moon, with the horns looking downwards. Then the edges of the inciſion ſhall bee opened, and lint put into the middle thereof, that ſo it may hinder the lips from joyning together again. Then ſhall you apply a plaſter upon the lint, and ſo binde up the part with a fitting ligature, that may ſomwhat preſs upon the whole eie, leſt it ſhould lift it ſelf ſomwhat upwards again, and ſo return into its ancient, but not natural figure. But in cutting the skin, you muſt take care that your inciſion harm not the griſtle; for if it bee cut, the eie-lid fall's down, neither can it bee afterwards lifted up. But now for the lower eie-lid: it is ſubject to ſundrie diſeaſes, amongſt which there is one which anſwereth in proportion to that, which wee late mentioned, which is, when as it is lifted upwards little or nothing, but hang's and gape's, and cannot bee joyned with the upper, and therefore it doth not cover the eie, which affect is familiar to old people; it is called *Ectropion*, and it may bee helped by means formerly delivered.

*Paulus Ægin. lib.6.cap.10.*

The cure.

*Ectropion*, or the turning up, or out of the eie-lid.

## CHAP. VII.

*Of the* Chalazion, *or Hail-ſtone, and the* Hordeolum, *or Barly-corn of the eie-lids.*

THe *Chalazion* is a round and cleer pimple, which grow's upon the upper eie-lid; it is alſo moovable, and may bee ſtirred this way and that way with your fingers. The Latines call it *Grando*, for that it reſemble's a hail-ſtone. Another pimple not much like this grow's ſomtimes upon the verges of the eie-lids above the place of the hairs. It is termed *Hordeolum*, by reaſon of the ſimilitude it hath with a barlie-corn. The matter of theſe is contained in its proper ciſt or skin, and therefore is hardly brought to ſuppuration. At the firſt begining it may bee reſolved and diſcuſſed. But when as it is once grown and concrete into a plaſter or ſtone-like hardneſs, it is ſcarce cureable. Wherefore it is beſt to perform the cure by opening them, that ſo the contained matter may flow, or bee preſſed forth. If the pimple or ſwelling bee ſmall, then thruſt it through with a needle and thread, and leav the thread therein of ſuch length, that you may faſten the ends thereof with a little of the emplaſter called *Gratia Dei*, like glue to the fore-head, if it be on the upper eie-lid; or to the cheeks, if on the lower. You muſt draw through a freſh one every ſecond daie, as is uſually done in chirurgicall ſetons. For thus at length the ſwelling will bee deſtroied, and made plain.

*Paul.cap6. lib.6.*

The cure.

## CHAP. VIII.

*Of the* Hydatis, *or fatneſs of the eie-lids.*

THe *Hydatis* is a certain fattie ſubſtance, like a piece of fat ſeated and lying under the skin of the upper eie-lid. It is a diſeaſ incident to children, who are of a more humid nature: wherefore it is a ſoft and looſ tumor, making the whole eie-lid, which it poſſeſſeth, œdematous; ſo that as if depreſſed with a weight, it cannot bee lifted up. It hath its name, for that it hath as it were a bladder diſtended with a whayiſh humor, which kinde of fault is obſerved by *Galen* in the liver. Thoſe, who are thus affected, have their eies look red, and flow with tears, neither can they behold the ſun, or endure the light. The cure is performed by cutting off the ſuperfluous ſubſtance, not hurting the neighbouring parts; and then preſently put ſom ſalt into the place whence it was taken out (unleſs the vehemencie of pain hinder) that ſo the place may bee dried and ſtrengthened, and the reſt of the matter (if anie ſuch bee) may bee conſumed, and hindred from growing again. Laſtly, you ſhall cover the whole eie with the white of an egg diſſolved in roſe-water, or ſom other repercuſſive.

What *Hydatis* is.

*Com.ad aphor. 55.ſect.7.*

The cure.

## CHAP. IX.

*Of the eie-lids faſtened or glewed together.*

*Paulus cap. 15. lib. 6.*

SOmtimes it cometh to paſs that the upper eie-lid is glewed or faſtened to the under, ſo that the eie cannot bee opened, or ſo that the one of them may ſtick or bee faſtened to the white coat of the eie, or to the hornie. This fault is ſomtimes drawn from the firſt originall, that is, by the default of the forming facultie in the womb (for thus manie infants are born with their fingers faſtened together, with their fundaments, privities and ears unperforated) the eie in all other reſpects beeing well compoſed. The cauſ of this affect ſomtimes proceed's from a wound, otherwhiles from a burn, ſcald or impoſtumation, as the breaking of the ſmall pox. It is cured by putting in a fit inſtrument, and ſo opening them; but with ſuch moderation, that you touch not the hornie coat, for otherwiſe it would fall out. Therefore you muſt put the end or point of your *probe* under the eie-lids, and ſo lifting them up (that you hurt not the ſubſtance of the eie) divide them with a crooked inciſion-knife.

The cauſ.

The cure.

The inciſion made, let the white of an egg beaten with ſom roſe-water bee put into the eie, let the eie-lids bee kept open; yea let the patient himſelf bee careful that hee often turn it upwards, and lift it up with his fingers, not onely that the medicine may bee applied to the ulcer, but alſo that they may not grow together again. In the night time let a little pledget dipped in water, and that either ſimple, or wherein ſom vitriol hath been diſſolved, bee laid thereon. For thus you ſhall hinder the eie-lids from joyning together again. Then on the third daie the parts or edges of the eie-lids ſhall bee touched with waters drying without biting or acrimonie, that ſo they may be cicatrized. But if the eie-lid adhere to the hornie coat at the *pupilla* or apple of the eie, the patient will either bee quite blinde, or verie ill of ſight. For the ſcar which enſue's will hinder the ſhapes of things from entring to the chryſtaline humor, and the viſive ſpirits from paſſing forth to the objects. For prognoſticks, you may learn out of *Celſus*, that this cure is ſubject to a relapſ, ſo that it may bee ſhunned neither by diligence nor induſtrie, but that the eie-lid will alwaies adhere and cleav to the eie.

A diſeaſ ſubject to relapſ.

## CHAP. X.

*Of the itching of the eie-lids.*

MAnie have their eie-lids itch vehemently by reaſon of ſalt phlegm, which oftentimes excoriating and exulcerating the parts themſelvs, yeeld's a *ſanies*, which joyn's together the eie-lids in the night time as if they were glewed together, and make's them watrie and bleared. This affect doth ſo torment the patients, that it oft-times make's them require the Phyſicians help. Wherefore general medicines beeing premiſed, the ulcers ſhall bee waſhed with the following *Collyrium*. ℞. *aquæ mellis in balneo mariæ diſtillatæ* ℥iii. *ſaccarii candi* ʒi. *aloës lotæ & in pollinem redactæ* ʒß. *fiat collyrium*. Which if it do no good, you may uſe this which follow's. ℞. *Ung. Ægyptiac.* ʒi. *diſſolve in aquæ plantaginis quantitate ſufficienti*. Let the ulcerated eie-lids bee touched with a ſoft linnen rag dipped therein, but with care that none thereof fall upon the eie. But when the patient goe's to bed, let him cauſ them to bee anointed with the following ointment, verie effectual in this caſe. ℞. *axungiæ porci & butyri recentis, an.* ℥ß. *tuth. præpar.* ʒß. *antimon. in aqua euphraſiæ præparati,* ℈ii. *camphoræ gra.* iiii. *miſce, & in mortario plumbeo ducantur per tres horas, conflatum indè unguentum, ſervetur in pyxide plumbeâ*. Som commend and uſe certain waters fit to cleanſ, drie, binde, ſtrengthen, and abſolutely free the eie-lids from itching and redneſs; of which this is one.

A detergent *Collyrium*.

℞. *aquæ euphrag. fœniculi, chelidon. an.* ℥ß. *ſarcocal. nutritæ* ℈ii. *vitriol. rom.* ʒi. *miſceantur ſimul, & bulliant unicâ ebullitione; poſtea coletur liquor, & ſervetur ad uſum dictum*. Or elſ, ℞. *aquæ roſ. & vini alb. boni an.* ℥iiii. *tuth. præpar. aloës an.* ʒi. *flor. æni* ℈ii. *camphor. gra.* ii. Let them bee boiled according to art, and kept in a glaſs to waſh the eie-lids. Or elſ, ℞. *vini albi* ℔ß. *ſalis com.* ʒi. let them bee put into a clean Barbar's baſon and covered, and kept there five or ſix daies, and bee ſtirred once a daie, and let the eie-lids bee touched with this liquor. Som wiſh that the patients urine bee kept all night in a Barbar's baſon, and ſo the patients eie-lids bee waſhed therewith. Verely in this affect wee muſt not fear the uſe of acrid medicines, for I once ſaw a woman of fiftie years of age, who waſhed her eie-lids when they itched with the ſharpeſt vinegar ſhee could get, and affirmed that ſhee found better ſucceſs of this then of anie other medicine. *Vigo* preſcribe's a water, whoſe efficacie above other medicines in this affect, hee ſaith, hath been proved; and that it is to bee eſteemed more worth then gold, the deſcription thereof is thus: ℞. *aq. roſ. vini albi odoriferi mediocris vinoſitatis an.* ℥iiii. *myrobalan. citrini trit.* ʒiß. *thuris* ʒii. *bulliant omnia ſimul uſque ad conſumptionem tertiæ partis; deinde immediatè addantur flores æris* ℈ii. *camph. gr.* ii. Let the liquor be kept in a glaſs well ſtopped for the fore-ſaid uſe.

You need not fear to uſe acrid medicines in the itching of the eie-lids. *Lib. 2. cap. 9. tract. 3.*

CHAP.

## CHAP. XI.

### *Of* Lippitudo, *or Blear-eies.*

THere are manie whose eies are never drie, but alwaies flow with a thin, acrid, and hot humor, which causeth roughnes, and upon smal occasions, inflammations, blear or blood-shot eies, and at length also *Strabismus* or squinting. *Lippitudo* is nothing elf but a certain white filth flowing from the eies, which oftimes agglutinate's or join's together the eie-lids. This disease often trouble's all the lifetime, and is to bee cured by no remedie; in som it is cureable. Such as have this disease from their infancie, are not to bee cured, for it remain's with them till their dying day. For large heads, and such as are repleat with acrid or much excrementitious phlegm, scarce yeeld to medicines. There is much difference whether the phlegm flow down by the internal vessels under the soul, or by the external which are betweeen the skull and the skin, or by both. For if the internal veins cast forth this matter, it will bee difficultly cured; if it bee cured at all. But if the external vessels cast forth, that cure is not unprofitable, which haveing used medicines respecting the whole bodie, applie's astringent medicines to the shaved crown, as *Empl. contra rupturam*, which may streighten the veins, and as it were suspend the phlegm, useth cupping, and command's frictions to bee made towards the hinde part of the head, and lastly, maketh a Seton in the neck. There are som who cauterize the top of the crown with an hot iron, even to the bone, so that it may cast a scale, thus to divert and staie the defluxion. For local medicines, a *Collyrium* made with a good quantitie of rose-water, with a little vitriol dissolved therein, may serv for all.

What *Lippitudo* is.

A *Collyrium* of vitriol to stay the defluxions of the eies.

## CHAP. XII.

### *Of the* Opthalmia, *or inflammation of the Eies.*

AN *Ophthalmia* is an inflammation of the coat *Adnata* and consequently of the whole eie, beeing troublesom by the heat, redness, beating, renitencie, and lastly pain. It hath its original either by som primitive cause or occasion, as a fall, stroke, dust, or small sand flying into the eies. For the eie is a smooth part, so that it is easily offended by rough things, as saith *Hippocrates*, *lib. de carnibus.* Or by an antecedent cause, as a defluxion falling upon the eies. The signs follow the nature of the material cause, for from blood especially cholerick and thin, it is full of heat, redness and pain; from the same allaied with phlegm all of them are more remiss. But if a heavinefs possess the whole head, the original of the disease proceed's therefrom. But if a hot pain trouble the forehead, the disease may bee thought to proceed from som hot distemper of the *Dura mater*, or the *pericranium*; but if in the verie time of the rageing of the disease the patient vomit, the matter of the disease proceed's from the stomack. But from whence soever it cometh there is scarce that pain of any part of the bodie, which may bee compared to the pain of the inflamed eies. Verily the greatness of the inflammation hath forced the eies out of their orb, and broken them asunder in diverse. Therefore there is no part of Physick more blazed abroad then for sore eies. For the cure, the Surgeon shall consider and intend three things; diet, the evacuation of the antecedent and conjunct cause, and the overcoming it by topick remedies. The diet shall bee moderate, eschewing all things that may fill the head with vapors; and those things used that by astriction may strengthen the orifice of the ventricle, and prohibit the vapors from flying up to the head; the patient shall bee forbidden the use of wines, unless peradventure the disease may proceed from a gross and viscid humor, as *Galen* deliver's it. The evacuation of the matter flowing into the eie, shall bee performed by purgeing medicines, phlebotomie in the arm, cupping the shoulders and neck with scarification, and without: and lastly, by frictions, as the Physician that hath undertaken the cure shall think fit. *Galen* after universal remedies for old inflammations of the eies, commend's the opening of the veins and arteries in the forehead and temples, becaus for the most part the vessels thereabouts distended with acrid, hot and vaporous blood, caus great and vehement pains in the eie.

What *Opthalmia* is, and the causes thereof.

Signs.

The cure.

*Com. ad aphor. 31 sect. 6.*

*Lib. 13. meth. cap. ult.*

For the impugning of the conjunct cause, diverse topick medicines shall bee applied, according to the four sundrie times or seasons that everie phlegmon usually hath. For in the begining when as the acrid matter flow's down with much violence, repercussives do much conduce: and tempred with resolving medicines, are good also in the encreas. ℞. *aq. ros. & plantag. an.* ℥ß. *mucagin. gum. Tragacanth.* ℥ii. *album. ovi quod sufficit, fiat collyrium*, let it bee dropped warm into the eie, and let a double cloth dipped in the same *collyrium* bee put upon it. Or, ℞. *mucag. sem. pſil. & cydon. extractæ in aq. plant. an.* ℥ß. *aq. solan. & lactis muliebris, an.* ℥i. *trochisc. alb. rha.* ℈. *fiat collyrium*, use this like the former. The veins of the temples may bee streightned by the following medicine. ℞. *bol. arm. sang. drac. et mast. an.* ℥ß. *alb. ovi, aquæ ros. et acet. an.* ℥i. *tereb. lot. et ol. cidon. an.* ℥i.ß. *fiat defensivum.* You may also use *Ung.*

A reperrcussive medicine.

Astringent emplasters.

*Ung. de Bolo, empl.diacal.* or *contra rupturam* diſſolved in oyl of myrtles, and a little vineger. But if the bitterneſs of pain bee intolerable, the following cataplaſm ſhall bee applied.

An anodine cataplaſm.

℞ *medul. pomor. ſub. ciner. coctorum* ℥iii. *lactis muliebris* ℥ ß. let it bee applied to the eie, the formerly preſcribed *collyrium* beeing firſt dropped in. Or, ℞ *mucag. ſem. pſil. & cidon. an.* ℥ß. *micæ panis albi in lacte infuſi.* ℥ii *aquæ roſ.* ℥ß. *fiat cataplaſma.* The blood of a Turtle-Dove, pigeon or Hen drawn by opening a vein under the wings, dropped into the eie, aſſwageth pain. Baths are not onely anodine, but alſo alſo ſtay the defluxion by diverting the matter thereof by ſweats; therefore *Galen* much commend's them in ſuch defluxions of the eies as com by fits. In the ſtate when as the pain is either quite taken away or aſſwaged, you may uſe the following medicines. ℞. *ſarcocol. in lacte muliebri nutritæ,* ℥i *aloës lotæ in aq. roſar.* ℥ii. *trochiſ. alb. rha.* ℥ß. *ſaccbar. cand.* ℥ii. *aquæ roſ.* ℥iii. *fiat collyrium.* Or, ℞. *ſem. fœniculi, & fœnug. an.* ℥ii. *ſio. chamæ. & melil. an.* m. ß. *coquantur in aq. com. ad* ℥iii. *colaturæ adde tuthiæ præp. & ſacroc. nutritæ in lacte muliebri. an* ℥i. ß. *ſaccbari cand.* ℥ß. *fiat collyrium ut artis eſt.* In the declination the eie ſhall bee fomented with a carminative decoction, and then this *collyrium* dropped thereinto. ℞. *ſacroc. nutritæ* ℥ii. *aloës & myrrh. an.* ℥i. *aq. roſ. & euphrag. an.* ℥ii. *fiat collyrium, ut artis eſt.*

The efficacie of Baths in pains of the eies.

*Ad aphor. ſect. 7.*

Detergent *Collyria.*

## CHAP. XIII.

### *Of the* Proptôſis, *that is the falling or ſtarting forth of the eie, and of the* Phthiſis *and* Chemôſis *of the ſame.*

THe Geerks call that affect *Proptôſis*, the Latines *Procidentia* or *Exitus oculi*, when as the eie ſtand's, and is caſt out of the orb, by the occaſion of a matter filling and lifting up the eie into a great bigneſs, and largeneſs of ſubſtance. The cauſ of this diſeaſ is ſomtimes external, as by too violent ſtraining to vomit, by hard labor in child-birth, by exceſſive and wondrous violent ſhouting, or crying out. It ſomtimes happeneth that a great and cruel pain of the head, or the too ſtrait bindeing of the forehead and temples for the eaſing thereof, or the palſie of the muſcles of the eie, give beginning to this diſeaſ. Certainly ſomtimes the eie is ſo much diſtended by the defluxion of humors, that it break's in ſunder, and the humors thereof are ſhed, and blindeneſs enſue's thereof, as I remember befel the ſiſter of *Lewis de Billy* merchant, dwelling at Paris neer S. *Michael's* bridg. The cure ſhall bee diverſified according to the cauſes. Therefore univerſal medicines beeing premiſed, cupping-glaſſes ſhall be applied to the original of the ſpinal marrow, and the ſhoulders; as alſo Cauteries, or Setons: the eie ſhall bee preſſed or held down with cloths doubled and ſteeped in an aſtringent decoction made of the juice of *Acacia*, red roſes, the leaves of poppie, henbane, roſes and pomgranat pills: of which things poultiſſes may bee made by addition of barlie-meal and the like.

The cauſ.

The cure.

There is ſomtimes to bee ſeen in the eie an affect contrarie to this, and it is termed *Atrophia*. By this the whole ſubſtance of the eie grow's lank and decay's, and the apple it ſelf becom's much leſs. But if the conſumption and emaciation take hold of the pupil onely, the Greeks, by a peculiar name and different from the general, term it a *Phthiſis*, as *Paulus* teacheth. Contrarie cauſes ſhall bee oppoſed to each affect; hot and attractive fomentations ſhall bee applied; frictions ſhall bee uſed in the neighboring parts, and laſtly all things ſhall bee applied which may without danger be uſed to attract the blood and ſpirits into the parts.

The *Atrophiæ* of the eie.

The *Phthiſis* thereof. *Lib. 3. cap. 22.*

There is another affect of the eie, of affinitie to the *Proptôſis*, which by the Greeks is termed *Chemôſis*. Now this is nothing elſ then when when both the eie-lids are turned up by a great inflammation, ſo that they can ſcarce cover the eies, and the white of the eie is lifted much higher up then the black. Somtimes the *Adnata*, changeing his wont, looketh red; beſides alſo, this affect may take its original from external cauſes, as a wound, contuſion and the like. But according to the varietie of the cauſes, and the condition of the preſent affect fixed and remaining in the part, diverſ remedies ſhall bee appointed.

The *Chemôſis. Paulus l. 3. c. 22.*

## CHAP. XIV.

### *Of the Ungula, or Web.*

THe *Ungula*, *Pterygion* or Web is the growth of a certain fibrous and membranous fleſh upon the upper coat of the eie called *Adnata*, ariſeing more frequently in the bigger, but ſomtimes in the leſſer corner towards the temples. When it is neglected, it cover's not onely the *Adnata*, but alſo ſom portion of the *Cornea*, and coming to the pupil it ſelf hurt's the ſight thereof. Such a Web ſomtimes adhere's not at all to the *Adnata*, but is onely ſtretched over it from the corners of the eie, ſo that you may thruſt a *probe* between it and the *Adnata*: it is of ſeveral colors, ſomwhiles red, ſomwhiles yellow, ſomwhiles duskiſh, and otherwhiles white. It hath its original either from

from external causes, as a blow, fall, and the like; or from internal, as the defluxion of humors into the eies. The *Ungula* which is inveterate, and that hath acquired much thickneſs and bredth, and beſides doth difficultly adhere to the *Adnata*, is difficultly taken away, neither may it bee helped by medicines whereby ſcars in the eies are extenuated. But that which covereth the whole pupil muſt not bee touched by the Surgeon, for beeing cut away, the ſcar which is left by its denſitie hindereth the entrance of objects to the cryſtalline humor, and the egreſs of the animal ſpirit to them. But oftentimes it is accompanied with an inflammation of the eies, a burning, itching, weeping defluxion, and ſwelling of the eie-lids. That the cure may rightly and happily proceed, hee muſt firſt uſe a ſpare diet, purgeing medicines ſhall bee given, and blood taken away by opening a vein, eſpecially, if there bee great inflammation. For particular remedies, this excreſcence ſhall bee eaten away, or at leaſt kept from growth, by dropping into the eie *collyrium* of vitriol deſcribed in wounds of the eies. But if that wee profit nothing by this means, it remaineth, that wee take it away with the hand after the following manner.

What Web curable, and what incurable.

The cure.

You ſhall ſet the patient upon a fourm or ſtool, and make him lean much back, and bee ſo held firmly, that hee may not fall nor ſtir, then muſt you open his ſore eie, putting therein a *ſpeculum oculi* formerly deſcribed in treating of the wounds of this part, and then muſt you litt up the Web it ſelf with a ſharp little hook, with the point turned a little in, and put under the mid'ſt of the Web; when you have lifted it a little up, thruſt a needle threded with a ſmooth thred between it and the *Adnata*, then takeing hold of the hook, and the two ends of the thred drawn through with the needle, and lifting up the Web by them, you ſhall gently begin to ſeparate it from the ſubſtance of the eie lying there-under, beginning at the original thereof with a crooked inciſion-knife, and ſo proſecute it even to the end; yet ſo as you hurt no part of the *Adnata*, nor *Cornea*.

The cutting of the Web.

*The figures of little hooks, a needle, and crooked inciſion-knife.*

*Little hooks.* *A needle.* *A crooked inciſion-knife.*

Then muſt it bee cut off with a pair of ſciſſers, and the white of an egg beaten with ſom Roſe-water laid thereon, and often renewed. Afterwards the eie muſt everie day bee opened, leaſt coming to cicatrization, the eie-lids ſhall bee glewed together in that part whereas the Web is taken away, which alſo ſhall bee hindered by putting of common ſalt, ſage and cummin-ſeeds into the eie, beeing firſt champed and chawed in the mouth. There are ſom who in ſtead of the crooked knife ſeparate the Web from the *Adnata* with a horſe's hair, others do it with a gooſquil made readie for the ſame purpoſe, takeing heed that they hurt not the caruncle at the corner by the noſe, for it will follow if that you draw the Web away too violently; and if it bee cut, there will remain a hole, through which dureing the reſt of the life a weeping humor will continually flow, a diſeaſe by the Greeks termed *Rhyas*. If after the cutting there bee fear of inflammation, linnen rags moiſtned in repelling medicines, formerly preſcribed in wounds of the eie, ſhall bee laid thereupon.

## CHAP. XV.

### *Of the* Egilops, Fiſtula lacrymoſa, *or weeping Fiſtula of the Eie.*

The uſe of the glandule at the greater corner of the eie.

AT the greater corner of the eie there is a glandule, made for the receiving and containing the moiſture which ſerveth for the lubricating and humecting the eye, leaſt it ſhould

The differences.

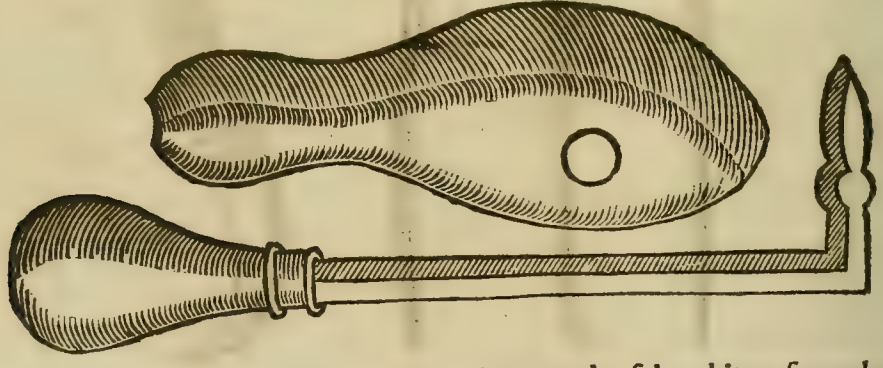
ſhould drie by continual motion. This glandule ſomtimes by a ſanguin or pituitous defluxion falling violenrly from the brain, ſwel's, impoſtumate's and ulcerate's with an ulcer, not ſeldom degenerateing into a fiſtula, ſo that in ſucceſs of time it rotteth the bone that lieth under it: of ſuch fiſtulae's, ſom are open outwardly, and theſe uſually have their original from a phlegmon; other ſom are inwardly, and thoſe are ſuch as at firſt ſwelled by the defluxion or congeſtion of a phlegmatick matter, ſo that there appeareth no hole outwardly, but onely a tumor of the bigneſs of a peaſ, this tumor beeing preſſed, floweth with a ſanious, ſerous and red or otherwiſe with a white and viſcid matter, aud that either by the corner of the eie, or by the inſide of the noſe. Som have this matter flowing continually, others have it onely monethly, which is proper alſo to ſom fiſtulae's. Such weeping fiſtulae's if they becom old, cauſan *Atrophia* of the eie, and ſomtimes blindeneſs and a ſtinking breath. Therefore wee muſt diligently and ſpeedily by phyſical and chirurgical means reſiſt the breeding diſeaſ. Wherefore, haveing uſed general medicines, wee muſt com to particulars. Therefore if the ulcer bee not ſufficiently wide, it ſhall bee enlarged by putting tents of ſpunge therein. The fleſh of the Glandule encreaſing more then is fit, ſhall bee corrected by putting therein the catheretick pouders of Mercurie, calcined vitriol, or ſom *aqua fortis*, or oil of vitriol, and laſtly, by a potential cauterie. If you cannot prevail by theſe means, and that the bone begin's to rot, and the patient bee ſtout hearted, then uſe an actual cauterie whoſe uſe is far more effectual, readie, certain and execellent, then a potential cauterie, as I have tried in manie with happie ſucceſs. In my opinion it make's no matter, whether the cauterie bee of gold, ſilver or iron; for the efficacie it hath, proceedeth not from the matter, but from the fire. Yet if wee muſt religiouſly obſerv and make choice of metals, I had rather have it of Iron, as that which hath a far more drying and aſtringent facultie then gold, for that the element of earth beareth the chief ſway therein, as appeareth by the waters which flow through iron-mines. Wherefore you ſhall cauſ to bee made a triangular Iron, ſharp at the end, that it may the more ſpeedily penetrate. And then the ſound eie and adjacent parts being well covered and defended, and the patien'ts head firmly holden in one's hand, leaſt the patient beeing frighted, ſtir himſelf in the verie inſtant of the operation. But a plate of iron ſomwhat depreſſed in the mid'ſt, for the cavitie of the greater corner, ſhall bee applied and fitted to the pained eie. This plate ſhall bee perforated that the hot Iron may paſs thereby to the fiſtula lying there-under, and ſo may onely touch that which is to bee cauterized.

Periodical and Typical Fiſtulaes.

The cure.

The efficacie of an actual cauterie.

*The figure of a cauterie, and a plate with a hole therein.*



Things to bee don after the cauterizing.

After the bone is burnt with the cauterie, a *collyrium* made of the whites of eggs beaten in plantain and night-ſhade waters muſt bee poured into the hole it ſelf, the eie and all the neighboring parts; but the patient ſhall bee laid in bed, with his head ſomwhat high, and the *collyrium* ſhall bee renued as often and as ſoon as you ſhall perceiv it to grow drie. Then the fall of the Eſchar ſhall bee procured by anointing it with freſh butter; when it is fallen away, the ulcer ſhall bee cleanſed, filled with fleſh, and laſtly cicatrized.

## CHAP. XVI.

### *Of the* Staphyloma, *or grape-like ſwelling.*

What a *Staphyloma* is, and the cauſes thereof.

*Staphyloma* is the ſwelling of the hornie and grape-like coat, bred through the occaſion of an humor flowing down upon the eie, or by an ulcer, the hornie coat beeing relaxed, or thru'ſt forth by the violence of the puſtule generated beneath. It in ſhape reſembleth a grape, whence the Greeks ſtyle it *Staphyloma*. This tumor is ſomtimes blackiſh, otherwhiles whitiſh. For if the hornie coat bee ulcerated and fretted in ſunder, ſo that the grapie coat ſhew it ſelf, and fall through the ulcer, then the *Staphyloma* will look black like a ripe grape, for the utter part of the *Uvea* is blackiſh. But if the *Cornea* bee onely relaxed and not broken, then the ſwelling appear's of a whitiſh color like an unripe grape. The Antients have made manie kindes or differences thereof. For if it bee but a ſmall hole of the broken *Cornea* by which the *Uvea* ſheweth or thruſteth forth its ſelf, they then termed it *Myocephalon*, that is, like the

*Paulus* and *Aetius.*

the head of a flie. But if the hole were large, and also callous, they called it *Clavus*, or a nail; if it were yet larger, then they termed it *Acinus*, or a grape. But in what shape or figure soever this diseas shall happen, it bringeth two discommodities, the one of blindenes, the other of deformitie. Wherefore here is no place for Surgerie to restore the sight, which is already lost, but onely to amend the deformitie of the eie; which is by cutting off that which is prominent. But you must take heed that you cut away no more then is fit, for so there would bee danger of pouring out the humors of the eie.

Everie *Staphiloma* infer's incureable blindnes.

## CHAP. XVII.

### *Of the* Hypopyon, *that is the suppurate or putrefied eie.*

PUS, or Quitture is somtimes gathered between the hornie and grapie coat from an internal or external cause: From an internal, as by a great defluxion, and oftentimes after an inflammation; but externally, by a stroke, through which occasion, a vein beeing opened hath poured forth blood thither, which may presently bee turned into Quitture. For the cure, universal remedies beeing premised, cupping-glasses shall bee applied, with scarifications and frictions used. Anodine and digestive *collyria* shall bee poured from above downwards. *Galen* write's that hee hath somtimes evacuated this matter, the *Cornea* beeing opened at the *Iris*, in which place all the coats meet, concur and are terminated. I have don the like, and that with good succes, *James Guillemeau* the Kings Surgeon beeing present, the Quitture beeing expressed and evacuated after the apertion. The Ulcer shall bee claensed with *Hydromel*, or som other other such like medicine.

The caus.

*Lib. 14. method. cap. ult.*

## CHAP. XVIII.

### *Oo the* Mydriasis, *or dilatation of the Pupil of the Eie.*

*Mydriasis* is the ditatation of the pupil of the eie, and this happeneth either by nature or chance: the former proceedeth from the default of the first conformation, neither is it cureable; but the other is of sorts; for it is either from an internal cause, the off-spring of an humor flowing down from the brain, wherefore Physical means must bee used for the cure thereof. Now that which cometh by anie external occasion, as a blow, fall, or contusion upon the eie, must bee cured by presently applying repercussive and anodine medicines, the defluxion must bee hindered by diet skilfully appointed, phlebolomie, cupping, scarification, frictions and other remedies which may seem convenient. Then must you com to resolving medicines, as the blood of a Turtle-dove, Pigeon, or chicken reeking-hot out of the vein, beeing poured upon the eie and the neighboring parts. Then this following cataplasm shall bee applied thereto ℞. *farinæ fabar. & hordei an.* ℥iii. *ol. rosar. & myrtillor. an* ℥i. ß. *pul. ireos flor.* ℥ii. *cum sapa fiat cataplasma.* You may also use the following fomentation. ℞. *rosar. rub. & myrtyl. an.* m.i. *florum melil. & chamæm. an.* p.i. *nucum cupr ess.* ℥i. *vini austeri* ℔.ß. *aq. rosar. & plantag. an.* ℥iii. make a decoction of them all for a fomementation to bee used with a sponge.

The Cause.

The Cure.

A digesting Cataplasm.

## CHAP. XIX.

### *Of a Cataract.*

A Cataract is called also by the Greeks *Hypochima*, by the Latines *suffusio*. Howsoever you term it, it is nothing els but the concretion of an humor into a certain thin skin under the hornie coat, just against the apple or pupil, and as it were swimming upon the waterie humor; and whereas the place ought to bee emptie, opposing it self to the internal facultie of seeing, whereby it differeth from spots and scars growing upon the hornie coat and *Adnata*. It somtimes covereth the whole pupil, otherwhiles but the one half thereof, and somwhiles but a smal portion thereof. According to this varietie the sight is either quite lost, weak, or somwhat depraved, becaus the animal visive spirit cannot in its entire substance pass through the denitie thereof. The defluxion of the humor whence it proceed's, is either caused by an external occasion, as a stroke, fall, or by the heat or coldnes of the encompassing air, troublesom both to the head and eies; or elf it is by an internal means, as the multitude, or elf the acrid hot and thin qualitie of the humors. This diseas also somtimes taketh its original from gros and fumid humors sent from a crude stomack, or from vaporous meats or drinks, up to the brain, and so it falleth into the eies, where, by the coldnes, straitnes and tarrying in the place, they turn into moisture, and at length into that concretion or film which wee see: The signs may bee easily drawn, from that wee have alreadie delivered. For when the cataract is formed and ripe, it resembleth a certain thin membrane spred over the pupil, and

A Cataract.

The differences.

Causes.

Signes.

and appeareth of a different color, according to the varietie of the humor whereof it conſiſteth, one while white, another while black, blue, aſh-colored, livid, citrine, green. It ſomtimes reſembleth quick-ſilver, which is verie trembling and fugitive, more then the reſt. At the firſt when it beginneth to breed, they ſeem to ſee manie things, as flies flying up and down, hares, nets, and the like, as if they were careleſly toſſed up and down before their eies: ſomtimes everie thing appeareth two, and ſomwhiles leſs then they are; becauſ the viſive ſpirit is hindered from paſſing to the objects by the denſitie of the skin, like as a cloud ſhadowing the light of the Sun. Whence it is that the patients are duller ſighted about noon, and ſurer and quicker ſighted in the morning and evening, for that the little viſive ſpirit diffuſed through the air, is diſperſed by the greater light, but contracted by the leſs. Now if this film cover half the pupil, then all things ſhew but by halfs; but if the mid'ſt thereof bee covered, and as it were the centre of the chryſtaline humor, then they ſeem as if they had holes or windows: but if it cover it all, then can hee ſee nothing at all, but onely the ſhadows of viſible bodies, and of the Sun, Moon, Stars, lighted candles, and the like luminous things, and that but confuſedly, and as by conjecture.

## CHAP. XX.

*Of the phyſical cure of a beginning Cataract.*

Diet for ſuch as are troubled with a Cataract.

A Begining Cataract is hindered from growing and concretion by diet conveniently and artificially preſcribed, by the abſtinence from wine, eſpecially more ſtrong and vaporous, and forbearing the uſe of meats, which yeeld a phlegmatick juice and vaporous: as peaſ, beans, turneps, cheſnuts, and, laſtly, all ſuch things as have the facultie of ſtirring up the humors, and cauſing defluxion in the bodie, ſuch as are all ſalt and ſpiced meats, as alſo garlike, onions, muſtard. The immoderate uſe of Venerie hurts more then all the reſt, for that it more violently exagitate's the whole bodie, weaken's the brain and head, and beget's crude humors. Let his bread bee ſeaſoned with ſom fennel ſeeds, for it is thought to have a facultie of helping the ſight, and clearing the eies, and diſſipating the miſtie vapors in the ſtomack before they can aſſcend to the brain. Wherefore by the ſame reaſon it is good to uſe marmelade of quinces, conſerv of roſes, and common drige powder, or anie ſuch like compoſed of things good to break winde, or corroborate the ventricle. Phlebotomie and purging, if they bee requiſite, ſhall bee fitly appointed: Ventoſes ſhall bee applied to the ſhoulders and neck; and phlegmatick matter ſhall bee diverted and evacuated by the mouth with uſing maſticatories in the morning. There bee ſom which beleev, that a begining Cataract may bee diſſipated and diſcuſſed by often rubbing the eie-lids with his fingers, and in like ſort by the often and earneſt beholding of the Stars, and the Moon when it is at the full, looking-glaſſes, diamonds, and all other ſuch like bright ſhining things. I beleev, that by beams plentifully and ſuddenly brought and diffuſed over the eie, directly oppoſite againſt ſome bright ſhining thing, it may ſeem to have a penetrating, dividing, diſſolving, as alſo a conſuming and drying facultie. Beſides, alſo the hot breath of him who holdeth in his mouth, and chaweth fennel ſeeds, aniſ-ſeeds, coriander ſeeds, nutmeg, cinnamon, cloves, and the like, hath a great facultie, the eies beeing firſt gently rubbed with the finger, it beeing breathed in neer at hand, and often received, to heat, attenuate, reſolv, digeſt and diffuſe the humor which is readie to concrete. Moreover, this *collyrium* of *John Vigo* is thought verie powerful to clear the eies, ſtrengthen the ſight, hinder ſuffuſions, and diſcuſs them, if at anie time they concrete, and begin to gather. R. *hepatis hircini ſani & recentis* ℔ii. *calomi aromatici & mellis an.* ℥ß. *ſucci rutæ*, ʒiii. *aquæ chelidoniæ, fœniculi, verbeniæ euphoſiæ, an.* ℥iii. *piperis longi, nucis moſchatæ, caryophyllorum an.* ʒii. *croci* ℈i. *floris roriſmarini aliquantum contriti*, m.ß. *ſarcocollæ, aloës hepaticæ, an.* ʒiii. *fellis ratæ, leporis & perdicis, an.* ℥i. *terantur omnia, tritiſque adde ſacchari albi* ℥ii. *mellis roſati* ʒvi. *conjiciantur in alembicum vitreum, & diſtillentur in balneo Mariæ:* Let this diſtilled liquor bee often dropped into the eies. But if you prevail nothing by all theſe medicines, and that the cloudie and heaped up humor doth daily increaſ and thicken, then muſt you abſtain from remedies, and expect until it bee no more heaped up, but thickned, yea until it ſeem to bee grown ſomwhat hard. For ſo it may bee couched with a needle; otherwiſe, if this ſame skin ſhall not bee ripe, but more tender then is fitting, when you ſhall com to the operation, it will bee broken and thruſt through with the needle, and not couched. On the contrarie, if it bee too hard, it will reſiſt the needle, neither will it ſuffer it ſelf to bee eaſily couched. Wherefore it is requiſite that the Surgeon know when it is ripe, and hee muſt diligently obſerv the ſigns whereby hee may diſcern a ripe Cataract from an unripe; and that which is cureable, from that which is uncureable. For that onely which is ripe and cureable is to bee couched; that which is unripe, that is, ſuch an one as is more tender, and as it were crude, and that which is more hard and denſ, and laſtly, that is uncureable muſt not bee attempted at all.

How bright ſhining things may diſſipate a begining Cataract.

A *Collyrium* diſſipating a begining Cataract.

A Cataract muſt not bee couched, unleſs it bee ripe.

CHAP.

## CHAP. XXI.

*By what ſigns ripe and cureable Cataracts may bee diſcerned from unripe and uncureable ones.*

IF the ſound eie beeing ſhut, the pupil of the ſore or ſuffuſed eie, after it ſhall bee rubbed with your thumb, bee preſently dilated & diffuſed, and with the like celeritie return into the place, figure, color and ſtate, it is thought by ſom to ſhew a ripe and confirmed Cataract. But an unripe, and not to bee couched, if the pupil remain dilated and diffuſed for a long while after. But it is a common ſign of a ripe, as alſo more denſ, and conſequently uncureable ſuffuſion, to bee able to ſee nor diſtinguiſh no viſible thing beſide light and brightneſs; for to diſcern other objects ſheweth that it is not yet ripe: Therefore the ſound eie beeing ſhut and preſſed, the pupil of the other rubbed with your thumb, is dilated, enlarged, ſwelleth, and is more diffuſed; the viſive ſpirits by this compreſſion beeing as it were forced from the ſound into the ſore eie. But theſe following Cataracts are judged uncureable, that is, ſuch as are great, ſuch as when the eie-lid is rubbed are nothing dilated or diffuſed, whoſe pupil becometh no broader by this rubbing: for hence you may gather, that the ſtopping or obſtruction is in the optick nerv, ſo that how cunningly and well ſoever the Cataract bee couched, yet will the patient continue blinde; you ſhall do no more good in couching a Cataract, which is in an eie conſumed and waſted with a *Phthiſis*. Alſo that Cataract is uncureable, which is occaſioned by a moſt grievous diſeaſ, to wit, by moſt bitter and cruel pains of the head, or by a violent blow. Such as are of a plaiſter-like, green, black, livid, citrine and quick-ſilver-like color, are uſually uncureable. On the contrarie, ſuch as are of a Cheſnut color, or of a skie or ſea-water color, with ſom little whiteneſs, yeeld great hope of a happie and ſucceſsful cure.

Uncureable Cataracts.

Cureable Cataracts.

## CHAP. XXII.

*Of the couching a Cataract.*

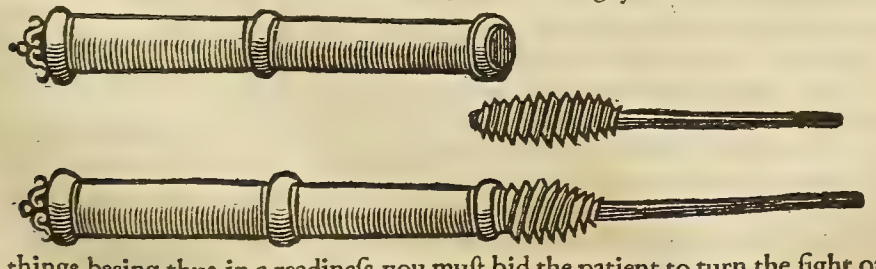
AFter you ſhall know by the fore-mentioned ſigns that the Cataract is cureable, it remains that you attempt the couching thereof, but ſo, that there bee nothing which may hinder. For if the pain of the head, cough, nauſeouſneſs or vomiting at that time trouble the patient, you ſhall then beſtow your labor in vain: Wherefore you muſt exſpect until theſe ſymptoms be gon. Then make choice of a ſeaſon fitting for that purpoſe, that is, in the decreaſ of the moon, when the air is not troubled with thunder nor lightning, and when as the Sun is not in Aries, becauſ that ſign hath dominion over the head. Then let the Surgeon conſult a Phyſician whether purging or blood-letting bee convenient for the patient, ſo to reſiſt plethorick ſymptoms, otherwaies readie to yeeld matter for relapſ. Two daies after you muſt make choice of a place furniſhed with indifferent or competent light, and the Patient being faſting ſhall bee placed in a ſtraight chair, ſo that the light may not fall with the beams directly upon him, but ſidewiſe. The eie which ſhall bee cured muſt bee made more ſteddie, by laying and bindeing wooll upon the other: Then the Surgeon ſhall ſeat and place himſelf directly againſt the patient upon a ſeat ſomwhat higher, and bidding the patient put his hands down to his girdle, hee ſhall hold the patient's legs between his knees. One ſhall ſtand at the patient's back, who ſhall hold his head, and keep it from ſtirring; for by a little ſtirring hee may loſe his ſight for ever. Then muſt you prepare and make readie your needle, and thruſt it often into ſom ſtrong thick cloth, that it may bee as it were ſmooth by this motion, and for the performance of the work in hand with the leſs pain ſomwhat warmed. It muſt bee made of iron or ſteel, and not of gold or ſilver, it muſt bee alſo flatted on the ſides, and ſharp-pointed, that ſo it may the better pierce into the eie, and wholly couch the Cataract once taken hold of; and leaſt it ſhould ſlip in the Surgeon's hand, and bee leſs ſteddie, it ſhall bee put into a handle, as you may ſee by the following figure.

When to couch a Cataract.

The place.

The needle.

*A needle inſerted in a handle for the couching of Cataracts.*



All things beeing thus in a readineſs, you muſt bid the patient to turn the ſight of his eie towards his noſe, & the needle muſt bee boldly thruſt (for it is received in a place that is void, & onely filled with ſpirits) directly by the coat *Adnata*, in the middle ſpace between the leſſer corner

corner and the hornie coat, juſt againſt the mid'ſt of the Cataract, yet ſo, as that you hurt no vein of the *Adnata*, and then by ſtirring it as it were diverſly until it com to the mid'ſt of the pupil and ſuffuſion. When it is com thither, the needle muſt bee inclined from above downwards to the ſuffuſion, and there to bee ſtirred gently until by little and little it couch or bring down the Cataract as whole as may bee beneath the compaſs of the pupil; let him ſtill follow it though couched with his needle, and ſomwhat violently depreſs and keep it down for ſom ſhort ſpace, that ſo it may reſt and ſtay in that lower place whether it is depreſſed. The Surgeon ſhall trie whether it firmly remain there or no, bidding the patient preſently to move his eie; for if it remain conſtantly ſo, and do not return again, the cure is perfect. Then muſt the needle bee lifted up by little and little, neither muſt it preſently bee taken forth, that if the Cataract ſhould bear up, or riſe again, that it might again, and ſo often (whil'ſt the work is yet hot, and all things in a readineſs) bee couched towards the leſſer corner, until it bee fully and ſurely hid. Then muſt you draw back the needle gently, and after the ſame manner as you put it in; leſt if you uſe not moderation, you bring back the Cataract from whence you couched it, or grievouſly offend the cryſtalline humor, the prime inſtrument of ſight, or the pupil with danger of dilateing thereof. Som as ſoon as the work is don, give the patient ſomthing in his hand to look upon: but *Paulus* approov's not thereof, for hee fear's leſt his endeavoring or ſtriveing to ſee, may draw back the Cataract. Wherefore it is more wiſedom and better, preſently after the drawing forth of the needle, to put on a ſoft rag the white of an egg beaten in roſe-water with a little choice alum, and ſo applie it to the eie and neighboring parts for to binde and hinder the inflammation; then alſo you muſt together therewith binde up the ſound eie, leſt by ſtirring to ſee, it might together therewith draw and move the ſore eie, by reaſon of the ſympathie and conſent they mutually have by the optick nervs. After all things are thus performed, the patient ſhall bee laid in a ſoft bed, and ſo placed, that his head may lie ſomwhat high; let him bee laid far from noiſ, let him not ſpeak, nor eat anie hard thing that may trouble his jaws, wherefore let him feed upon liquid meats, as panado, barly cream, culliſſes, gellies, rear-eggs, and other meats of the like nature. At the end of eight daies the ligature that binde's up the eies ſhall bee looſed, and his eies waſhed with roſe-water, and putting on ſpectacles, or ſom taffatie, the patient ſhall by little and little accuſtom himſelf to the light, leſt hee ſhould bee offended by the ſudden meeting with light. But if the ſuffuſion, after ſom ſhort while after, lift it ſelf up again, it muſt bee couched again, but through a new hole, for the eie is pained and tender in the former place. It ſomtimes happen's by the touch of the needle that the Cataract is not couched whole, but is broken into manie pieces; then therefore each of them muſt bee followed, and couched ſeverally: if there bee anie verie ſmall particle which ſcape's the needle, it muſt bee let alone, for there is no doubt but that in proceſs of time it may bee diſſolved by the force of the native heat. There are alſo ſom Cataracts which at the firſt touch of the needle are diffuſed and turn into a ſubſtance like to milk or troubled water, for that are not throghly ripe, yet theſe put us in good hope of recoverie, and it bee but for this, that they can never afterwards concrete into one bodie as before. Wherefore at the length they are alſo diſcuſſed by the ſtrength of the native heat, and then the eie recover's its former ſplendor. If that anie other ſymptoms com unlooked for, they ſhall bee helped by new counſels and remedies.

*Gal. lib. 10. de uſu partium. c. 5 Celſ. lib. 7.*

The ſign of a Cataract well couched.

*Lib. 6. cap. 21.*

What to bee don after the couching of a Cataract.

Of a Cataract which is broken to peeces.

## CHAP. XXIII.

*Of the ſtopping of the paſſage of the Ears, and the falling of things thereinto.*

The cauſ.

IT ſomtimes happeneth that children are born without anie holes in their ears, a certain fleſhly or membranous ſubſtance growing in their bottom or firſt entrance. The ſame may alſo happen afterwards by accident, they beeing ulcerated by ſom impoſtume or wound, and the ear ſhut up by ſom fleſhly excreſcence or ſcar. When as the ſtopping is in the bottom of the cavitie, the cure is more difficult then if it were in the firſt entrance, But there is a double way of cure; for this ſubſtance, whatſoever it bee, muſt either bee cut out, or elſ eaten away and conſumed by acrid and catheretick medicines; in performance of which there is need of great moderation of the minde and hand. For it is a part endued with moſt exquiſite ſence and near the brain, wherefore by handling it too roughly, there is fear of diſtention of the nervs, and conſequently of death.

The cure.

Somtimes alſo the preternatual falling of ſom ſtrange bodies into this paſſage maketh a ſtopping of the ears, ſuch as are fragments of ſtone, gold, ſilver, iron and the like metals, pearls, cherrie-ſtones, or kernels, peaſ and other ſuch like pulſ. Now ſolid and bonie bodies ſtill retain the ſame magnitude; but peaſ, ſeeds and kernels, by drawing the moiſture there implanted into them, ſwell up, and cauſ vehement pain by the diſtention of the neighboring parts, wherefore the ſooner they are drawn forth, the better it is for the patient. This ſhall bee don with ſmall pincers and inſtruments made in the ſhape of ear-picks. But if you profit nothing thus, then muſt you uſe ſuch gimblets as are made for the drawing forth of

of bullets ſhot deep into the bodie. Little ſtones and bodies of the like ſtonie hardneſs ſhall bee forced forth by the brain, provoked to concuſſion by ſneeſing, and by dropping ſom oil of almonds firſt into the paſſage of the ear, that the way may bee the more ſlipperie; for it will com to paſs by this ſneeſing, or violence of the internal air forcibly ſeeking paſſage out, that at length they may bee caſt forth, the mouth and noſtrils beeing ſtopped with the hand. But if wee cannot thus prevail, it remain's, that wee cut open the paſſage with an inciſion-knife, ſo much as ſhall bee ſufficient for the putting in and uſing of an inſtrument for to extract them. If anie creeping things of little creatures, as fleas, ticks, piſmires, gnats and the like, which ſomtimes happeneth, ſhall get therein, you may kill them by dropping in a little oil and vinegar. There is a certain little creeping thing, which for piercing and getting into the ears, the French call *Perſe-oreille* (wee an ear-wig.) This, if it chance to get into the ear, may bee killed by the foreſaid means, you may alſo catch it, or draw it forth by laying half an apple to your ear, as a bait for it.

The concuſſive force of ſneeſing.

## CHAP. XXIV.

*Of getting of little bones and ſuch like things out of the jaws and throat.*

Somtimes little bones and ſuch like things in eating greedily uſe to ſtick, or as it were faſten themſelvs in the jaws or throat. Such bodies if you can com to the ſight of them, ſhall bee taken out with long, ſlender and crooked mallets made like a Craneſ-beak. If they do not appear, nor there bee no means to take them forth, they ſhall bee caſt forth by cauſing vomit, or with ſwallowing a cruſt of bread, or a drie fig gently chawed, and ſo ſwallowed; or elſ they ſhall bee thruſt down into the ſtomack, or plucked back with a leek, or ſom other ſuch long and ſtiff crooked bodie anointed with oil, and thruſt down the throat. If anie ſuch like thing ſhall get into the weazon, you muſt cauſ coughing, by taking ſharp things, or elſ ſneeſing, ſo to caſt forth whatſoever is there troubleſom.

The cure different according to the places where they ſtick.

## CHAP. XXV.

*Of the Tooth-ache.*

OF all pains, there is none which more cruelly tormenteth the patients then the Tooth-ache. For wee ſee them oft-times after the manner of other bones to ſuffer inflammation, which will quickly ſuppurate, and they becom rotten, and at length fall away piece-meal; for wee ſee them by daily experience to bee eaten and hollowed, and to breed worms, ſom portion of them putrefying. The cauſ of ſuch pain is either internal, or external and primitive. The internal is a hot or cold defluxion of humors upon them, filling their ſockets, and thence conſequently driving out the teeth; which is the reaſon that they ſtand ſomtimes ſo far forth, that the patient neither dare's, nor can make uſe of them to chaw for fear of pain: for that they are looſ in their ſockets by the relaxation of the gums, cauſed by the falling down of the defluxion. When as they are rotten and perforated even to the roots, if anie portion of the liquor in drinking, fall into them, they are pained as if you thruſt in a pin or bodkin, the bitterneſs of the pain is ſuch. The ſigns of a hot defluxion are ſharp and pricking pain, as if needles were thruſt into them, a great pulſation in the root of the pained tooth and the temples, and ſom eaſ by the uſe of cold things. Now the ſigns of a cold defluxion are a great heavineſs of the head, much and frequent ſpitting, ſom mitigation by the uſe of hot remedies. In the bitterneſs of pain wee muſt not preſently run to Tooth-drawers, or cauſ them preſently to go in hand to pluck them out. Firſt conſult a Phyſician, who may preſcribe remedies according to the varietie of the cauſes Now heer are three intenſions of cureing. The firſt is concerning diet; the other for the evacuation of the defluxion or antecedent cauſ; the third for the application of proper remedies for the aſſwageing of pain. The two former ſcopes, to wit, of diet, and diverting the defluxion by purgeing, phlebotomie, application of cupping-glaſſes to the neck and ſhoulders, and ſcarification, do abſolutely belong to the Phyſician. Now, for proper and topick medicines they ſhall bee choſen contrarie to the cauſ. Wherefore in a hot cauſ, it is good waſhing the mouth with the juice of pomgranats, plantain-water, a little vinegar wherein roſes, *balauſtiæ* and *ſumach* have been boiled. But ſuch things as ſhall bee applied for the mitigating of the pain of the teeth, ought to bee things of verie ſubtle parts, for that the teeth are parts of denſ conſiſtence. Therefore the ancients have alwaies mixed vinegar in ſuch kind of remedies. ℞. *roſar. rub. ſumach. hordei, an.* m. ß. *ſeminis hyoſcyami conquaſſati* ʒii. *ſantalorum an.* ʒi. *lactucæ ſummitatum rubi, ſolani, plantaginis, an.* m. ß. *bulliant omnia in aquæ* ℔ iiii.

The Tooth-ach a moſt cruel pain.

The cauſ thereof.

The ſigns of this or that defluxion.

Three ſcopes of cureing.

A cold and repercuſſive lotion for the mouth.

*& pauco aceto ad hordei crepaturam.* Waſh the mouth with ſuch a decoction beeing warm. You may alſo make Trochiſces for the ſame purpoſe after this manner. Rx. *ſem. hyoſciami,* Trochiſces for a hot defluxion. *ſandaracha, coriandri, opii an. ʒß. terantur & cum aceto incorporentur, formenturque trochiſci apponendi dentibus dolentibus.* Or elſ, Rx. *ſeminis portulacæ, hyoſcyami, coriandri, lentium, corticis ſantali citrini, roſar. rub. pyrethri, camphoræ, an.* ʒß. let them all bee beaten together with ſtrong vineger, and made into trochiſces, with which beeing diſſolved in roſe-water, let the gums and whole mouth bee waſhed when need requireth. But if the pain bee not aſſwaged with Narcoticks. theſe, you ſhall com to narcoticks, which may ſtupefie the nerv; as, Rx. *ſeminis hyoſcyami albi, opii, camphoræ, papaveris albi, an. quantum ſufficit, coquantur cum ſapâ, & denti applicentur.* Beſides, you muſt alſo put this following medicine into the ear of the pained ſide. Rx. *opii & caſtorei, an.* ℈i. *miſceantur cum oleo roſato:* It hath ſomtimes availed in ſwoln and diſtended gums, beeing firſt lightly ſcarified, to have applied leeches, for the evacuation of the conjunct matter, as alſo to have opened the veins under the tongue, or theſe which are behinde the ears. For I remember that I, by theſe three kindes of remedies, aſſwaged great pains of the teeth. Yet there bee ſom who in this affect open not theſe veins which are behinde the ears, but thoſe which are conſpicuous in the hole of the ear in the upper part thereof.

Pain of the teeth ariſeing from a cold cauſ and defluxion, may bee helped by theſe remedies; boil roſemarie, ſage, and pellitorie of Spain in wine and vineger, and add thereto a little *aqua vitæ*, in this liquor diſſolv a little treacle, and waſh your teeth therewith. Others mingle gum *ammoniacum* diſſolved in *aqua vitæ* with a little *ſandaracha* and myrrh, and lay it to the pained tooth, after *Vigoe's* counſel. *Meſne* think's that beaten garlick carried in the right or left hand, aſſwage's the pain, as the teeth ake upon the right or left ſide. But I beeing once troubled with grievous pain in this Kinde, followed the counſel of a certain old woman, and laid garlick roſted under the embers to my pained tooth, and the pain forthwith ceaſed. The ſame remedie uſed to others troubled with the like affect, had like ſucceſs. Moreover, ſom think it available if it bee put into the auditorie paſſage. Others drop into the ears oil of *caſtoreum*, or of cloves, or ſom ſuch other chymical oil. It is good alſo to waſh the teeth with the following decoction. Rx. *rad. pyrethri* ʒß. *menthæ & rutæ an.* p.i. *bulliant in aceto*, and Hot ſumes. with this decoction beeing warm, waſh the teeth. Som like fumes better, and they make them of the ſeeds of *Colloquintida* and muſtard, and other like; they take the ſmoak by holding their mouths over a funnel. Other ſom boil pellitorie of Spain, ginger cinnamon, alum, common ſalt, nutmegs, cypreſs-nuts, aniſ and muſtard ſeeds, and *euphorbium* in oxycrate, and in the end of the decoction add a little *aqua vitæ*, and receiv the vapor thereof through a funnel; as alſo they waſh their teeth with the decoction, and put cotton dipped therein into the ear, firſt dropping in a little thereof. Som there are which affirm, that to waſh the teeth with a decoction of Spurge is a verie good and anodine medicine in the tooth-Veſicatories. ach. I have oft-times aſſawaged intolerable pains of the teeth, by applying veſicatories under the ear, to wit, in that cavitie whereas the lower jaw is articulated with the upper: for the vein, arterie and ſinew which are diſtributed to the roots of the teeth, lie thereunder. Wherefore the bliſters beeing opened, a thin liquor run's out, which doth not onely cauſ, but alſo nouriſh or feed the diſeaſ. But if the tooth bee hollowed, and that the patient will not have Cauſticks. it pull'd out, there is no ſpeedier remedie, then to put in cauſtick medicines, as oil of vitriol, *aqua fortis*, aud alſo a hot iron; for thus the nerv is burn't in ſunder, and loſeth it's ſenſ. Yet ſom affirm that the milkie juice that flow's from Spurge made into a paſte with *olibanum* and *amylum*, and put into the hollowed tooth, will make it preſently to fall away in pieces. When the gums and cheeks are ſwoln with a manifeſt tumor, then the patient begin's to bee ſomwhat better and more at eaſ. For ſo by the ſtrength of nature, the tumor cauſing the pain is carried from within outwards. But of what nature ſoever the matter which cauſeth the pain bee, it is convenient to intercept the courſ thereof with *Empl. contra rupturam*, made with pitch and maſtick, and applied to the temple on that ſide where the tooth asketh.

## CHAP. XXVI.

### *Of other affects of the Teeth.*

Causes of looſneſs of the teeth. THe teeth are alſo troubled with other preternatural affects. For ſomtimes they ſhake by relaxation of the gums, or elſ beecom corrupt and rotten, or have worms in them, or elſ are ſet on edg. For the firſt, the gums are relaxed either by an external or primitive cauſ, as a fall or blow: or elſ by an internal or antecedent, as by the defluxion of acrid or wateriſh humors from the brain, or through want of nouriſhment in old bodies. If the teeth grow looſ by the means of the decaying gums, the diſeaſ is then incureable; but you may withſtand the other cauſes by the uſe of ſuch things as faſten the teeth, ſhunning on the contrarie ſuch as may looſen them.

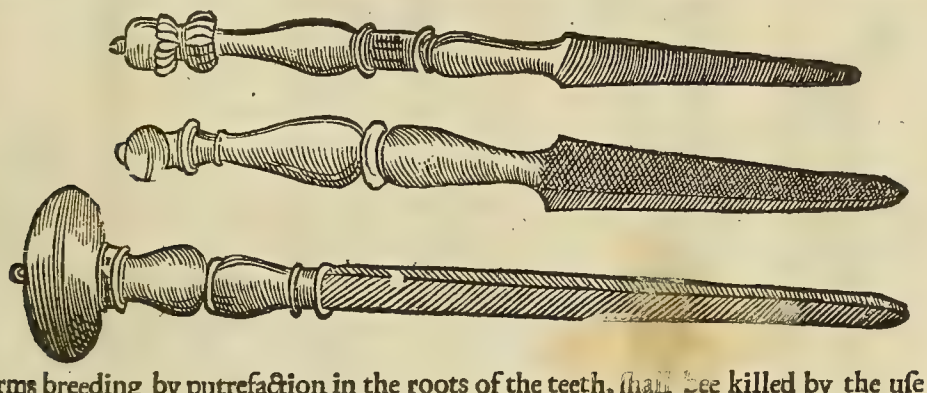
There-

Therefore the patient muſt not ſpeak too earneſtly, neither chaw hard things. If they becom looſ by a fall or blow, they muſt not bee taken forth, but reſtored and faſtened to the next that remain firm, for in time they will bee confirmed in their ſockets, as I tried in *Antonie de la Rue* a Tailor, who had his jaw broken with the pommel of a dagger, and three of his teeth looſened, and almoſt ſhaken out of their ſockets; the jaw beeing reſtored, the teeth were alſo put in their places, and bound to the reſt with a double waxed thred; for the reſt, I fed the patient with broths, gellies, and the like, and I made aſtringent gargariſms of cypreſs-nuts, myrtle-berries, and a little alom boil'd in oxycrate, and I wiſhed him to hold it a good while in his mouth: by theſe means I brought it ſo to paſs, that hee within a while after could chaw as eaſily upon thoſe teeth, as upon the other. I heard it reported by a credible perſon, that hee ſaw a Ladie of the prime Nobilitie, who inſtead of a rotten tooth ſhee drew, made a ſound tooth, drawn from one of her waiting-maids at the ſame time, to bee ſubſtituted and inſerted; which tooth in proceſs of time, as it were taking root, grew ſo firm, as that ſhee could chaw upon it as well as upon anie of the reſt. But as I formerly ſaid, I have this but by hear-ſay. A Hiſtorie.

Now the teeth are corroded or eaten in by an acrid and thin humor penetrating by a plenteous and frequent defluxion even to their roots, and beeing there contained, it putrefie's, and becoming more acrid, it doth not onely draw the teeth into the contagion of its putrefaction, but alſo perforate's and corrode's them. The cauſes of hollow teeth.

The putrefaction may bee corrected, if after general medicines, you put oil of vitriol or *aqua fortis* into the hole of the eaten tooth: or elſ, if you burn the tooth it ſelf to the root with a ſmall iron wier beeing red hot: you ſhall thruſt this hot iron thorow a pipe or cane made for the ſame purpoſe, leaſt it ſhould harm any ſound part by the touch thereof, and thus the putrefaction, the cauſ of the arroſion, may bee ſtaied. But if the hole bee on the one ſide between two teeth, then ſhall you file away ſo much of the ſound tooth, as that you may have ſufficient libertie to thruſt in your wier without doing anie harm. The cure.

*The forms of Files made for fileing the teeth.*



Worms breeding by putrefaction in the roots of the teeth, ſhall bee killed by the uſe of cauſticks, by gargles or lotions made of vineger, wherein either pellitorie of Spain hath been ſteeped, or treacle diſſolved; alſo aloës and garlick are good to bee uſed for this purpoſe. Cauſes of worms in the teeth.

Setting the teeth on edg happen's to them by the immoderate eating of acrid or tart things, or by the continual aſſcent of vapors endued with the ſame qualitie, from the orifice of the ventricle to the mouth, or by a cold defluxion, eſpecially of acrid phlegm, falling from the brain upon the teeth, or elſ by the too exceſſive uſe of cold or ſtupifying liquors. This affect is taken away, if after general medicines and ſhunning thoſe things that cheriſh the diſeaſ, the teeth bee often waſhed with *aqua vitæ*, or good wine, wherein ſage, roſemarie, clovs, nutmegs, and other things of the like nature have been boiled. Cauſes of ſetting the teeth on edg.

## CHAP. XXVII.

### *Of drawing of Teeth.*

TEeth are drawn, either for that they cauſ intolerable pains, which will not yeeld to medicines, or elſ for that they are rotten and hollowed, ſo that they cauſ the breath to ſmell; or elſ, for that they infect the ſound and whole teeth, and draw them into the like corruption, or becauſ they ſtand out of order. Beſides, when they are too deep and ſtrongly rooted, ſo that they cannot bee pluck'd out, they muſt oft-times bee broken of neceſſitie, that ſo you may drop ſom cauſtick thing into their roots, which may take away the ſenſ, and conſequently the pain. The hand muſt bee uſed with much moderation in the drawing out of a tooth; for the jaw is ſomtimes diſlocated by the too violent drawing out of the lower teeth. But the temples, eies and brain are ſhaken with greater danger by the too rude drawing of the upper teeth. Wherefore they muſt firſt bee cut about, that the gums may bee looſed from them, then A caveat in drawing of teeth.

ſhake them with your fingers, and do this until they begin to bee looſ; for a tooth which is faſt in, and is plucked out with one pull, oft-times break's the jaw, and bring's forth the piece together therewith, whence follow's a fever and a great flux of blood not eaſily to bee ſtaied (for blood or *pus* flowing out in great plentie is, in *Celſus's* opinion, the ſign of a broken bone) and manie other malign and deadlie ſymptoms: Som have had their mouths drawn ſo awrie, during the reſt of their lives, ſo that they could ſcarce gape. Beſides, if the tooth bee much eaten, the hole thereof muſt bee filled either with lint, or a cork, or a piece of lead well fitted thereto, leſt it bee broken under your *forceps*, when it is twitched more ſtraightly to bee plucked out, and the root remain, readie in a ſhort time to cauſ more grievous pain. But judgment muſt bee uſed, and you muſt take ſpecial care, leaſt you take a ſound tooth for a pained one; for oft-times the patient cannot tell, for that the bitterneſs of pain by neighborhood is equally diffuſed over all the jaw. Therefore for the better plucking out a tooth, obſerving theſe things which I have mentioned, the patient ſhall bee placed in a low ſeat, bending back his head between the tooth-drawer's legs; then the tooth-drawer ſhall deeply ſcarifie about the tooth, ſeparating the gums there-from with the inſtruments marked with this letter A. and then if ſpoiled as it were of the wall of the gums, it grow looſ, it muſt bee ſhaken and thruſt out, by forceing it with the three-pointed levatorie noted with this letter B. but if it ſtick in too faſt, and will not ſtir at all, then muſt the tooth bee taken hold of with ſom of theſe toothed *forcipes* marked with theſe letters C.D.E. now one, then another, as the greatneſs, figure, and ſite ſhall ſeem to require. I would have a tooth-drawer expert and diligent in the uſe of ſuch toothed mullets; for unleſs one know readily and cunningly how to uſe them, hee can ſcarce ſo carrie himſelf, but that hee will force out three teeth at once, oft-times leaving that untouch't which cauſed the pain.

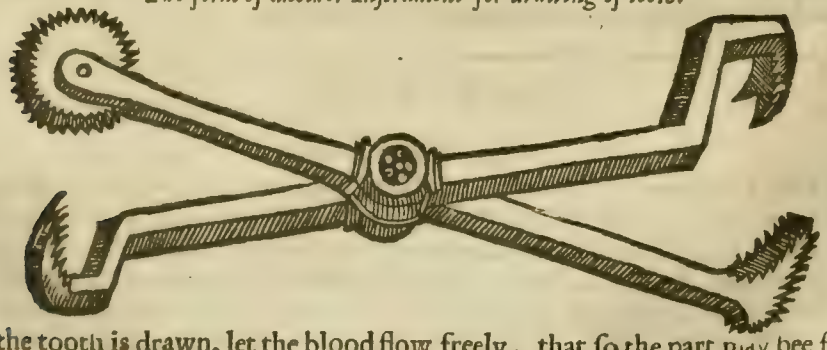
*Lib. 7. cap. 18.*

The maner of drawing teeth.

*Inſtruments for ſcrapeing the teeth, and a three-pointed levatorie.*

*The effigies of* Forcipes, *or Mullets for the drawing of teeth.*

*The form of another Inſtrument for drawing of teeth.*



What to bee don when the tooth is pluck't out.

After the tooth is drawn, let the blood flow freely, that ſo the part may bee free'd from pain, and the matter of the tumor diſcharged. Then let the tooth-drawer preſs the fleſh of the gums on both ſides with his fingers whereas hee took out the tooth, that ſo the ſocket that was too much dilated, and oft-times torn by the violence of the pluck, may bee cloſed again. Laſtly, the mouth ſhall bee waſhed with oxycrate; and if the weather bee cold, the patient ſhall take heed of going much in the open air, leaſt it cauſa new defluxion upon his teeth.

CHAP.

## CHAP. XXVIII.

*Of cleansing the Teeth.*

PIeces of meat in eating somtimes stick between the teeth, and becoming corrupt by long staying there, do also hurt the teeth themselvs, and spoil the sweetnes of the breath. Hee that would eschue this, ought presently after meat to wash his mouth with wine mixed with water, or oxycrate, and well to cleans his teeth, that no slimie matter adhere to them. Manie folks teeth by their own default gather an earthie filth of a yellowish color, which eat's into them by little and little, as rust eat's into iron. This rustie filthines, or as it were mouldines of the teeth, doth also oft-times grow by the omitting of their proper dutie, that is, of chawing. Whence soever this slimie filth proceed's, wee must get *Dentifrices* to fetch it off withall, and then the teeth must bee presently rubbed with *aqua fortis* and *aqua vitæ* mixed together, that if there bee anie thing that hath scaped the *Dentifrices*, it may bee all fetched off; yet such acrid washings are hurtful to the sound teeth, for that they by little and little consume and waste the flesh of the gums.

Causes of foul or rustie teeth.

The cure.

A caution in the use of acrid things.

*Dentifrices* shall bee made of the root of marsh-mallows boiled in white wine and allom; and, as when the teeth are loos, wee must abstain from such things as are hard to bee eaten & chawed, but much more from breaking of such things as are of a bonie consistence, so also heer wee must shun all things that by their toughnes stick to the teeth. Manie for the cleansing of the teeth, commend a powder made of scuttle-bones, purple-shells, pumice-stone, burnt allom, and Hart's-horn, and a little cinnamon, which is a singular remedie for the teeth howsoever affected. Manie other are content with bread onely tosted and beaten; but this following water is verie effectuall to whiten the teeth. ℞. *sal.ammon. & gemmei, an.* ℥i. *alum.roch.* ℥ß. *aquæ ros.quod sufficit, distillentur.* And let the teeth bee cleansed with this distilled liquor.

A water to whiten the teeth.

## CHAP. XXIX.

*Of the impediment and contraction of the Tongue.*

THe tongue is somtimes tied and short from the nativitie; as when the libertie of the tongue is restrained by the subject and neighboring, as well membranes as muscles, being either too short or too hard. Somtimes this disease happen's after they are born by som accident or preternatural affect, as by too hard a scar left by the healing of an ulcer under the tongue. The patient at his begining to speak, is too slow in speaking, but presently leaving his slowness, hee becom's too quick, so that hee stammer's. If the disease proceed from the astriction and shortnes of the ligamental membrane lying under the tongue, then the incision shall bee made broad-wise, having great care that the veins and arteries which are there, bee not violated, for fear least they should caus an *hemorrhagie*, not easily to bee staied: Then the mouth shall bee presently washed with oxycrate, and som lint dipped in syrup of dried roses, or honie of roses put into the midst of the incision, least the part of the ligament, especially on the night time when the tongue is silent and at rest, should grow to the rest of the ligament. For the same purpose the finger shall bee often thrust this way, and the tongue more violently rowll'd up and down, and thrust out of the mouth. Yet somtimes this ligament is so thick and short, and therefore hold's down the tongue so close, that you cannot com to cut it with a knife or lancet without great and manifest danger of death by bleeding. Therefore in such a case a needle and thred shall bee thrust through it, and so the thred shall bee tied straighter and straighter everie day, until by little and little this ligamental tie of the tongue, which by its immoderate shortnes intercept's the libertie of the motion shall bee consumed and broken.

The caus of beeing tongue-tied.

The cure.

Another way to cut it.

## CHAP. XXX.

*Of superfluous Fingers, and such as stick together.*

EAch hand hath naturally five fingers onely; whatsoever is more or les is against nature: and if there bee fewer, it is a fault not to bee helped by art. But if there bee more, that for the most part may bee helped by art: superfluous fingers usually grow by the thumb, or the little finger, but seldom otherwise. These are either wholly fleshie, or have bones of their kinde and nails upon them. Those which are of a bonie nature doe either arise from the joints of the natural fingers, and are jointed like them, and so are oft-times moovable, or elf from som middle space of a joint, and these have not power to stir or moov. Now they are somtimes

The differences.

equall in magnitude to the natural fingers to which they grow, yet more frequently they are ſhorter. Thoſe which are onely fleſhie, are eaſily amputated and made even with a razor; but ſuch as are alſo bonie cannot bee cut off, unleſs with the cutting mullets hereafter deſcribed, and this is a diſeaſ of the fingers in number. There is alſo another diſeaſ in fingers, for they ſomtimes ſtick together, and otherwhiles they are verie little ſeparated. This fault happen's either from the firſt original, by the error of the formative facultie; or elſ it happen's afterwards by accident, as by a wound, or burn ill cured. For neighboring fingers beeing ulcerated do eaſily grow together, unleſs they bee kept aſunder by a linnen rag. And if they by chance ſhall grow together by a little and thin skin and fleſh, they ſhall forthwith bee divided with a ſharp razor; but if they bee joined by the interpoſition of a more groſs and denſ ſubſtance, to wit, the nervs, tendons, and veſſels, being knit together on each ſide, it will bee beſt not to meddle at all with the divideing them.

*Cutting Mullets neatly made for the cutting off ſuperflous fingers.*

The cure of nails running into the fleſh of the fingers.

Neither muſt wee omit, that manie have their nails run with ſuch bonie ſharpneſs into the fleſh of their fingers lying under them, that they cauſ moſt cruel pain; neither commonly do you avail anie thing by pareing them; for growing up within a while after, they preſs downwards again with the more violence. Therefore the Surgeon is often forced to cut away all the fleſh whereinto the ſharpneſs of the nail run's. Which I have don in manie with happie ſucceſs. Manie have corns growing upon their fingers in divers faſhions: They

How to take off the corns of the fingers.

are taken off by paring away by little and little the callous hardneſs, and then laying a head of garlick beaten thereon. Yet the cure is more quick and certain, which is performed by cauſticks, as *aqua fortis*, or oil of vitriol.

## CHAP. XXXI.

*Of the too ſhort a Prepuce, and of ſuch as have been circumciſed.*

The cauſ.

The cure.

When as the Prepuce or fore-skin is too ſhort, it cannot cover the *Glans*. This happen's either by nature, to wit, by the firſt conformation, or afterwards by ſom accident, as to thoſe whom religion and the cuſtom of their nation bid's to bee circumciſed. The cure is thus: The Prepuce is turned up, and then the inner membrane thereof is cut round, and great care is had, that the vein and arterie which are there between the two membranes of the Prepuce bee not cut in ſunder. Hence it is drawn downward by extenſion, until it cover the *Glans*, a deſiccative emplaſter beeing firſt put between it and the *Glans*, leaſt they ſhould grow together. Then a pipe being firſt put into the urinarie paſſage, the Prepuce ſhall bee there bound until the inciſion bee cicatrized. This cure is uſed to the Jews, when having abjured their religion full of ſuperſtitions, for handſomneſs ſake, they would cover the nut of their yard with a Prepuce, and ſo recover their cut offs-kin.

## CHAP. XXXII.

*Of* Phimoſis *and* Paraphimoſis, *that is, ſo great a conſtriction of the Prepuce about the* Glans *or Nut, that it cannot bee barred or uncovered at pleaſure.*

The prepuce is ſtraightened about the *Glans* two waies; for it either cover's the whole nut, and ſo ſtraightly encompaſſe's the end thereof, that it cannot bee drawn upwards, and

and consequently the nut cannot bee uncovered; or elſ it leav's the *Glans* bare under it, being faſtned ſo ſtiffly to the roots there of, that it cannot bee turned up, nor drawn down, or over the *Glans*. The firſt manner of conſtriction is termed *Phimoſis*, the later *Paraph imoſis*. The cauſes. The *Phimoſis* happen's either by the fault of the firſt conformation, or elſ by a ſcar, through which occaſion the prepuce hath grown leſſer, as by the growing of warts. Now *Paraphimoſis* is often occaſioned by the inflammation of the yard, by impure copulation; for hence ulcers breed between the prepuce and *Glans*, with ſwelling, and ſo great inflammation, that the prepuce cannot bee turned back. Whence it is that they cannot bee handled and cured The cure. as you would, and a gangrene of the part may follow, which may by the contagion bring death to all the bodie, unleſs it bee hindered and prevented by amputation: but if a ſcar bee the cauſ of the conſtriction of the prepuce, the patient beeing plac'd in a convenient ſite, let the prepuce bee drawn forth and extended, and as much as may bee ſtretched and enlarged, then let the ſcar bee gently cut in three or four places on the inner ſide with a crooked knife, but ſo, that the gaſhes com not to the outſide, and let them bee an equal diſtance each from other. But if a fleſhlie excreſcence or a wart ſhall bee the occaſion of this ſtraitneſs and conſtriction, it ſhall bee conſumed by the ſame remedies, by which the warts of the womb and yard are conſumed or taken off. But when as the prepuce doth cloſely adhere to the *Glans* on everie ſide, the cure is not to bee hoped for, much leſs to bee attempted.

## CHAP. XXXIII.

*Of thoſe whoſe* Glans *is not rightly perforated, and of the too ſhort or ſtrait ligament, bridle, or cord of the yard.*

SOm at their birth, by evil conformation, have not their *Glans* perforated in the The cauſ. middle, but have onely a ſmall hole underneath, toward the bridle and ligament of the yard, called the cord. Which is the cauſ, that they do not make water in a ſtrait line, unleſs they turn up their yard toward their bellie, neither by the ſame reaſon can they beget children, becauſ through this fault of conformation, the ſeed is hindered from beeing caſt directly into the womb. The cure is wholly chirurgical, and is thus performed. The prepuce is taken hold of and extended with the left hand, The cure. but with the right hand, the extremitie thereof, with the end of the *Glans*, is cut even to that hole which is underneath. But ſuch as have the bridle or ligament of the yard too ſhort, ſo that the yard cannot ſtand ſtraight, but crooked, and as it were turned downwards; in theſe alſo the generation of children is hindered, becauſ the ſeed cannot bee caſt directly and plentifully into the womb. Therefore this ligament muſt bee cut with much dexteritie, and the wound cured after the manner of other wounds, haveing regard to the part.

Children alſo are ſomtimes born into the world with their fundaments unperforated, for Such as are born without a hole in their fundament are not long lived. a skin preternaturally covering the part, hinder's the paſſage forth of the excrement; thoſe muſt have a paſſage made by art with an inſtrument, for ſo at length the excrements will com forth: yet I have found by experience, that ſuch children are not naturally long live'd, neither to live manie daies after ſuch ſection.

## CHAP. XXXIV.

*Of the cauſes of the Stone.*

THe Stones which are in the bladder have for the moſt part had their firſt origi- Why children are ſubject to the ſtone in the bladder. nal in the reins or kidnies, to wit, falling down from thence by the ureters into the bladder. The cauſ of theſe is twofold, that is, material and efficient. Groſs, tough, and viſcid humors, which crudities produce by the diſtempers of the bowels and immoderate exerciſes, chiefly and immediately aftet meat, yeeld matter for the ſtone; whence it is that children are more ſubject to this diſeaſ then thoſe of other ages. But the efficient cauſ is either the immoderate heat of the kidnies, by means whereof The cauſ. the ſubtler part of the humors is reſolved, but the groſſer and more earthlie ſubſide's, and is hardned as wee ſee bricks hardned by the ſun and fire; or the more remiſs heat of the bladder, ſufficient to bake into a ſtone the *fæces* or dregs of the urine gathered in great plentie in the capacitie of the bladder. The ſtraightneſs of the ureters and urenarie paſſage may bee accounted as an aſſiſtant cauſ. For by this means the thinner portion of the urine floweth forth, but that which is more feculent and muddie being ſtaied behinde, groweth as by ſcale upon ſcale, by addition and collection of new matter into a ſtonie maſs. And as a wieke oftentimes dipped by the Chandler into melted tallow, by the copious adheſion of the tallowie ſubſtance preſently becom's a large candle; ſo the more groſs and viſcid *fæcis* of the urine ſtay as it were at the bars of the gathered gravel, and by their continual appulſ are at length wrought and faſhioned into a true ſtone.

CHAP.

## CHAP. XXXV.

*Of the ſigns of the Stone in the Kidnies and Bladder.*

Why the thigh is numm in the ſtone of the reins.

THe ſigns of the Stone in the Reins, are the ſubſideing of red or yellow ſand in the urine, a certain obſcure itching at the kidnies, and the ſenſ of a weight or heavineſs at the loins, a ſharp and pricking pain in mooving or bending the bodie, a numneſs of the thigh of the ſame ſide, by reaſon of the compreſſion cauſed by the ſtone, of the nervs deſcending out of the *vertebræ* of the loins of the thigh. But when the ſtone is in the bladder, the fundament and whole *perinæum* is preſſed as it were with a heavie weight, eſpecially if the ſtone bee of anie bigneſs, a troubleſom and pricking pain run's to the verie end of the yard, and there is a continual itching of that part, with a deſire to ſcratch it: hence alſo by the pain and heat there is a tenſion of the yard, and a frequent and needleſs deſire to make water, and ſomtimes their urine cometh from them drop by drop. A moſt grievous pain torment's the patient in makeing water, which hee is forced to ſhew hy ſtamping with his feet, bending of his whole bodie, and the grateing of his teeth. Hee is oft-times ſo tormented with exceſs of pain, that the *Sphincter* beeing relaxed, the right gut falleth down, accompanied with the ſwelling heat and pain of the *Hemorboid* veins of that place. The cauſ of ſuch torment is, the frequent ſtriveing of the bladder to expel the ſtone wholly contrarie to the nature thereof, whereto by ſympathie the expulſive faculties of the guts and all their parts of the bellie com as it were for ſupplie. The ſediment of the urine is groſs and viſcid, and oft-times like the whites of eggs, which argueth the weakneſs of the native heat not attenuateing the juices. The patient looketh of a pale and yellowiſh complexion and hollow-eied, by reaſon of the almoſt continual watching which is cauſed by the bitterneſs of pain; yet may it morc certainly bee known by putting in or ſearching with a *Catheter*. Which to do, the patient ſhall bee wiſhed to ſtand with his bodie ſomwhat ſtooping, leaning againſt ſomwhat with his back, and holding his knees ſom foot aſunder. Then the *Catheter* beeing bigger or leſſer as the bodie ſhall require, and anointed with oil or butter ſhall bee thruſt with a skilful hand into the paſſages of the urine, and ſo into the capacitie of the bladder. But if the *Catheter* cannot com to that capacitie, the patient ſhall bee placed in ſuch a poſture; then ſhall hee bee laid upon his back on a bench, or the feet of a bed, with his knees bended, and his heels drawn to his buttocks, after which manner hee muſt almoſt lie when hee is to bee cut for the ſtone, as ſhall bee ſhew'n hereafter, For thus the *Catheter* is more eaſily thruſt into the bladder, and ſhew's there is a ſtone by the meeting and obſcure ſound of the obvious, hard and reſiſting bodie. You muſt have ſundrie *Catheters*, that they may ſerv for everie bodie bigger and leſſer, and theſe muſt bee crooked, ſmooth and hollow. When being thruſt into the urinarie paſſage (which before unawares I omitted) they com to the neck of the bladder, they muſt not bee thruſt ſtraight into the bladder; but takeing hold of the yard with the left hand, they muſt bee gently thruſt with the right directly into the bladder, eſpecially in men, by reaſon of the length and crookedneſs of the way, which tend's in the form of this letter S. It is not ſo in women by reaſon of the ſhortneſs and ſtraitneſs of the neck of the bladder. It is fit your *Catheters* bee hollow or fiſtulous in manner of a pipe, that they may receiv a ſilver wiar or ſtring, that may hinder the groſs and viſcid humor, clotted blood, or the like, from ſtopping the further end of the *Catheter*, through which the ſuppreſſed urine ought to paſs and bee made. But now aſſoon as wee perceiv that the *Catheter* is com into the capacitie of the bladder, the wiar muſt bee drawn forth, that ſo the urine may the freelier flow out by the hollowneſs of the *Catheter*. You may perceiv the ſhapes of theſe inſtruments by this following figure.

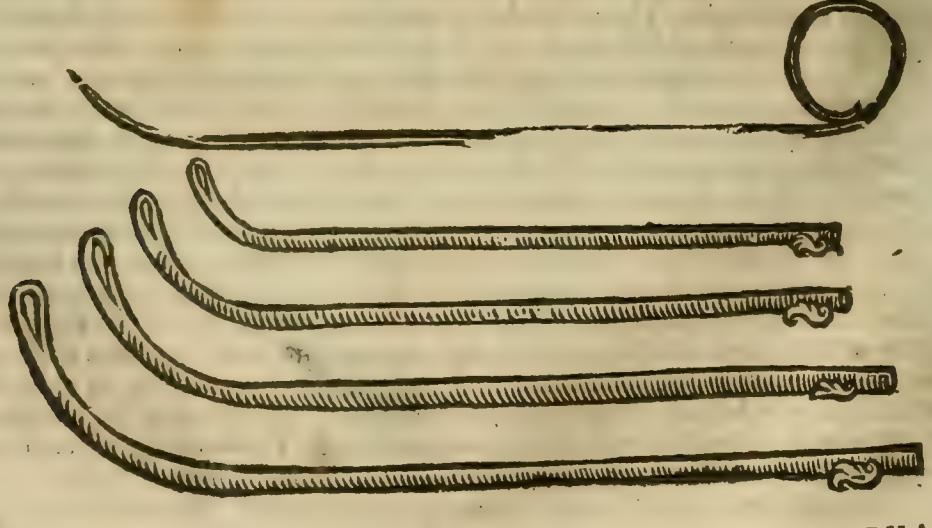
Signs of the ſtone in the bladder.

Why ſuch as have a ſtone in the bladder are troubled with the falling of the fundament.

How to ſearch for the ſtone in the bladder with a *Catheter*.

The figure of the neck of the bladder is different in men and women.

*The figure of* Catheters, *and of a ſilver ſtring or wiar.*



CHAP.

## CHAP. XXXVI.

*Prognosticks in the Stone.*

WHen the Stone is cast forth of the kidnie (whereas it bred by little and little) and is so driven into one of the ureters, that it wholly stop it, yet thereupon there followeth no suppression of the urine; for seeing nature hath made divers parts of our bodie double, all the urine floweth into the other ureter. But if they shall bee both stopped with stones, there is no doubt but the urine will bee wholly suppresst, and death ensue by the suffocation and extinction of the native heat, by the urine flowing back by the rivelets of the veins over all the whole bodie. Such as have a small stone cast forth of their reins into the cavitie of the uterers, these, untill this stone bee fallen into the bladder, have cruel pain with gripeings, with often desire to go to stool and make water, but oft-times do neither. For such oft-times have their bellies distended with flatulencies: an argument hereof is their continual belching or breaking of winde. But by sneesing and coughing, or anie other concussion of the whole bodie, a pricking pain is forthwith felt, whereas the stone stop's, especially if it bee either rough, or have sharp points like horns. This pain is communicated to the hip and thigh by sympathie, and som have the stones drawn up as it were with great violence. To these may bee added the Colick, cholerick vomiting, and almost a general sweat. The stone in the kidnies is most commonly bred in such as are antient, by reason of the weakness of the expulsive facultie. But the stone in the bladder happeneth to such as are more young, becaus the native heat is more vigorous in such, and strong and inordinate motions encreas the strength of the expulsive facultie. When the stone is in the bladder, and the urine appeareth bloodie, it is the sign of a small, as also a pricklie and rough stone, for thus it more easily entreth into the neck of the bladder, and exulcerateth it beeing fleshie, whence the blood cometh away with the urine, and most cruel pain as of needles thrust into the flesh, especially after labor and much exercise: on the contrarie, a larger and more smooth stone will not caus such tormenting pain, and it causeth a milkie water. The shapes of stones in the kidnies are various, according to the varietie of the strainers through which they pass whil'st they are bred. Verily I have seen stones which represented the figure of grayhounds, hogs and other creatures, and things wholly contrarie to man's nature, by the production of their prickles and as it were branches. Som are four square, others longish and like a finger, other som of a round figure with manie protuberancies like a pine-apple kernel; neither is the varietie less in magnitude, number and color: for som are yellowish, others whitish, red, ash-colored or som other like, according to the various temper of the affected bodies. The stones of cholerick and lean men vsually concrete by preternatural heat and drieness; but those of phlegmatick or fat bodies, of a certain congelation as it were and obstruction of the passages. A stone falling somtimes from the bottom of the bladder into the passages of the urine quite stop's it up, and thence followeth a total suppressing of the urine. Therefore then the patient shall bee placed upon his back and his legs beeing lifted up on high, hee shall bee shaken and tossed up and down, just as one would shake up a sack to fill it; for thus it is forced back into the bladder from whence it came, from the passage of the urine whereinto it was got; yet it may also bee forced back by thrusting in a Catheter. The pain which afflicteth such as have the stone is somwhiles continual, yet more frequently it cometh by fits and returns, somtimes monthly, otherwhiles yearly. Such as have the stone in the kidnies make for the most part waterish urine. Women are not so subject to the stone as men, for they have the neck of their bladder more short and broad, as also more straight; wherefore the matter of the stone by reason of the shortness of the passage is evacuated in gravel, before it can bee gathered and grow into a stone of a just magnitude; yet stones breed in som women and those equally as big as in men, and therefore they are to bee cured by section and the like remedies. When the stone exceedeth the bigness of an egg, it can sarce bee taken away without tearing of the bladder, whence happeneth an unvoluntarie shedding of the water, cureable by no art, becaus the bladder, seeing it is nervous and without blood, beeing once torn admitteth no consolidation, add hereto that inflamation and a gangrene, often following the rending of the bladder, bring inevitable death. The patient run's the same hazzard, if a long stone bee pulled out sidewise with your instrument, or if it bee inclosed in a membrane (which kinde of stone can scarce bee found with a Catheter) and so bee fastned to the bladder, or otherwise if the stone it self bee fastned into the substance of the bladder, or lastly if by anie chance the Surgeon beeing about to pluck out the stone shall hurt the bodie of the bladder with his instruments. Yet stones of a more indifferent bigness are more safely extracted out of the bladder then those which are less, and the patient more frequently and happily recovereth. For they do not scape from the instrument, and the patient beeing used a long while to endure pain, as that which hath been a long time a growing doth more easily and constantly away with the inflamation, pain and other symptoms which happen after cutting, yea in cutting. Haveing thus spoken of the causes, signs, places, symptoms and pro-

How death may ensue by the suppressing of urine.

Why stones of the kidnies have sundrie shapes.

Why men are more subject to the stone then women.

What stones cannot bee taken out of the bladder without killing the patient.

prognoſticks, wee muſt com to the cure, begining with that part which is termed *Prophylactice*, that is the preventing part.

## CHAP. XXXVII.

*What cure is to bee uſed when wee fear the Stone.*

What diet ſuch muſt uſeas fear the ſtone.

Diet muſt firſt bee appointed, which by the convenient uſe of the ſix things not natural (as they term them) may heap up ſmall ſtore of groſs, tough and viſcid humors in our bodies. Therfore cold and cloudie air is to bee ſhunned. They muſt abſtain from fiſh, beef, pork, water-foul, pulſ, cheeſ, milk-meats, fried and hard eggs, rice, cakes and all paſtrie, unlevened bread, and laſtly, all manner of obſtructing meats. Alſo garlik, onions, leeks, muſtard, ſpices, and laſtly, all things which over-heat the blood and humors muſt bee ſhunned, eſpecially if you fear that the ſtone is concrete by the heat of the reins. Standing and muddie waters, thick and troubled wines, beer, aud ſuch kinde of liquors muſt bee eſchewed. Satietie in meats and drinks is to bee ſhunned, as that which breed's crudities. Alſo long watching and continual labor becauſ they inflame the blood, cauſ crudities, and preternatural heat muſt carefully bee eſchewed, as alſo more vehement paſſions of the minde. If the bodie bee plethorick, then it muſt bee evacuated by phlebotomie, purgeing and vomiting, which is accounted for a ſingular remedie for the prevention of this diſeaſ. For the performance of all which things a Phyſician ſhall bee conſulted with. But becauſ Phyſicians are not in everie place and alwaies as hand, I have thought good to ſet down theſe following medicines; yet wee muſt firſt remember this counſel of *Galen*; the uſe of diureticks, and ſtrong purgeing medicines is hurtful, as often as there is inflammation in the reins and bladder, for ſo the conflux of the humors to the affected parts is the greater, whence the inflammation and pain are increaſed. *Lib. 13. method.*

A lenitive and lubricateing ſyrrupe.

Wherefore firſt uſeing relaxing medicines, as ſix drams of *Caſſia* newly drawn, with ℈iv. of *Rubarb* in powder mixed therewith; then lenitive and refrigerating medicines ſhall bee inwardly and outwardly uſed, ſuch as is this following ſyrrupe. ℞. *ſummitatum malv. biſmal. & violar. an.* m.ſ. *rad. alth.* ℥i. *glycyr.* ℥ſ. 4. *ſem. frigid. major. an.* ℥i. *fiat decoctio.* ℞. *prædict. decoctionis* ℔ ſ. *in colaturâ diſſolve ſacc. albiſſ.* ℥ii. *mellis albi* ℥iſſ. *fiat ſyrupus ſecund. artem*; let the patient uſe this often.

A diuretick Apozeme.

This following apozeme is alſo verie effectual for the ſame purpoſe. ℞. *rad. aſpar. gramin. polyp. quercini, paſſul. mund. an.* ℥ſ. *betonic. herniar. ægrimon. omnium capill. & pimpinel. an.* m. ſ. 4. *ſem. frigid. major. & ſem. fœnic. an.* ℥i. *folior. ſen.* ℥vi. *fiat decoct. ad* ℔ ſ. *in colaturâ diſſolve ſyrupi de Althæa & de herniar. an.* ℥iſſ. Make a clear apozeme and let it bee aromatized with a little cinnamon, for two doſes; let him take the firſt doſis in the morning two hours before meat, and the other at four of the clock in the afternoon.

A diuretick and lenitive broth.

Moreover this following broth hath an excellent and certain power to prevent the ſtone. ℞. *hordei integr.* p.i. *radic. petroſelini, acetoſ. fœnic. cichor. bruſci an.* ℥i. 4. *ſem. frigidorum conquaſſatorum an.* ℥ſ. *fol. acetoſ. portul. lactucæ, ſummitatum malvæ, & violar. an.* m.ſ. *bulliant in aquâ fluviatili cum gallo gallinaceo & crure vitulino*; let the broth bee kept, and let the patient take thereof ſix ounces for four daies; in the morning two hours before meat, with an ounce of the juice of Citrons gently warmed with the ſame broth at the takeing thereof; for thus, much urine will bee made in a ſhort while after, full of a ſandie ſediment and a groſs viſcid humor. Whereby you may certainly gather, that this kinde of broth is verie effectual to cleanſ the paſſages of the urine, neither in the interim, doth it anie harm to the ſtomack and other parts by which it paſſeth: ſo that it may bee rightly termed a medicinal nouriſhment.

A diuretick powder.

You may alſo profitably uſe this following powder. ℞. *nucleorum meſpilorum* ℥i. *pul. elect. diamarg. frig.* ℥ii. 4. *ſem. frigid. majorum mund. glycyrhizæ razæ*, ℥i. *ſem. ſaxifrag.* ℥ii. *ſem. milii ſolis, geniſt. pimpin. bruſci & aſparag. an.* ℈i. *ſem althææ*, ℥ſ. *ſacch. albiſſ.* ℥vi. *fiat pulvis*; let him take a ſpoonful in the morning three hours before meat.

The lee made of the aſhes of bean-ſtalks a diuretick.

Alſo ſom think that lee made of the ſtalks and husks of beans is a good preſervative againſt this diſeaſ. Beſides the uſe of this following glyſter hath done good to manie.

Anodine glyſters in the ſtone.

℞. *fol. lactuc. ſcariol. portul. an* m.i: *flor. viol. & nenuph. an.* p.i. *fiat decoctio. ad lib.* i. *in colaturâ diſſolve caſſiæ fiſtulæ* ℥i. *mellis viol. & ſacc. rub. an.* ℥iſſ. *olei viol.* ℥iiii. *fiat clyſter.* This which followeth is the fitter to aſſwage the pain. ℞. *flor. cham. melil. ſummitat. aneth. berul. an.* p.ii. *fiat decoctio in lacte vaccino*; *in colaturâ diſſolve caſſiæ fiſtul. & ſaccar. alb. an.* ℥i. *vitellos ovorum num.* ii *olei anethini, & chamæm. an.* ℥ii. *fiat clyſter.* In the interim let the kidnies bee anointed on the outſide with *unguentum roſatum, refrigerans Galen.* and *populeon* uſed ſeverally, or mixed together, laying a double linnen cloth dipped in oxycrate.

Remedies againſt the ſtone of the kidnies coming form a cold cauſ.

But if the concretion of the ſtone bee of a cold cauſ, the remedies muſt bee varied, as follow's: ℞. *terebeinth. venet.* ℥i. *cort. citri* ℥ii. *aquæ coct.* ℥ii. *fiat potio.* Or elſ; ℞. *caſſiæ recent. extract.* ℥vi. *benedict. lax.* ℥iii. *aq. fœnic.* ℥ii. *aq. aſparag.* ℥i. *fiat potio*; let him take it three hours before dinner: this following apozeme is alſo good. ℞. *rad cepet. bardan. & gram. an.* ℥iii. *biſmal. cum toto, beton. an.* m.ſ. *ſem. milii ſolis, bardan. urtic. an.* ℥ii. *ſem melon. glycyrhiz. raſ. an.* ℥iiſſ. *ficus num.* 4. *fiat decoct. ad quart.* iii. *in expreſſâ collaturâ, diſſolve ſirup. de caphan. & oxymilitis ſcyllitici*

*litici an.* ℥i. ß. *sacchar. albiſ.* ℥iii. *fiat apozema pro tribus doſibus, clarificetur & aromatiz. cum* ʒi. *cinam. &* ʒß. *ſant. citrin.* let him take four ounces three hours before dinner. ℞. *rad. petroſel. fœnicul. an.* ℥i. *ſaxifrag. pimp. gram. & bardan. an.* m.ß. *quatuor ſeminum frig. major mundat. & milii. ſolis an.* ʒii. *fiat decoctio, cape de colaturâ* ℔ ß. *in quâ diſſolve ſacch. rub. & ſyrup. capill. ven. an.* ℥i. ß. Let it bee taken at three doſes, two hours before meat. The following powder is verie effectual to diſſolv the matter of the ſtone. ℞. *ſem. petroſel. & rad. ejuſdem mundat. an* ℥ß. *ſem. cardui, quem colcitrapam vocant,* ℥i. let them bee dried in an oven or ſtone with a gentle fire, afterwards let them bee beaten ſeverally and make a powder, whereof let the patient take ℈i.ß. or two ſcruples with white wine, or chicken-broth faſting in the morning by the ſpace of three daies. Or, ℞. *coriand. præp.* ℈iv. *aniſ. marathri, ganor. alkakengi, milii ſolis, an.* ʒii. *zinzib. & cinam. an.* ℈ii. *turbith. electi* ʒi. *cari* ℈ii. *galang. nucis moſchat. & lapid. judiaci an.* ℈i. *fol. ſennæ mund. ad duplum omnium, diacrydii* ʒii.ß. *miſce, fiat pulvis :* the doſis is about ʒi. with white wine three hours before meat. Againſt the flatulencies which much diſtend the guts in this kinde of diſeaſ, glyſters ſhall bee thus made ; ℞. *malu. biſmal. pariet. origani, calament. flor. chamæm. ſumitat. anethi, an.* m.ß. *aniſi, carvi. cumini, fœnic. an.* ℥ß. *baccar. laur.* ʒiii. *ſem. rutæ* ʒii. *fiat decoctio, in colaturâ, diſſolve bened. lax. vel diaphœnic.* ℥ß. *confect. hac. lauri* ʒiii. *ſacchar. rub.* ℥i. *olei aneth. chamæm- & rutar. an.* ℥i. *fiat clyſter.* Or, ℞. *olei nucum & vini mal. an.* ℔.ß. *aq. vitæ* ℥ß. *fiat clyſter* ; let it bee kept long, that ſo it may have the more power to diſcuſs the winde.

Carminative glisters.

## CHAP. XXXVIII.

*What is to bee don, when the ſtone falleth out of the Kidnie into the* Ureter.

OFt-times it falleth out that the reins uſeing their expulſive facultie force down the ſtone (whoſe concretion and generation the Phyſicians by the formerly preſcribed means could not hinder) from themſelvs into the ureters ; but it ſtaieth there either by reaſon of the ſtraightneſs of the place, or the debilitie of the expulſive facultie. Therefore then cruel pain tormenteth the patient in that place whereas the ſtone ſticketh, which alſo by conſent may bee communicated to the hip, bladder, teſticles and yard, with a continual deſire to make water and go to ſtool. In this caſe it behooveth the Phyſician that hee ſupplie the defect of nature, and aſſiſt the weak indeavors.

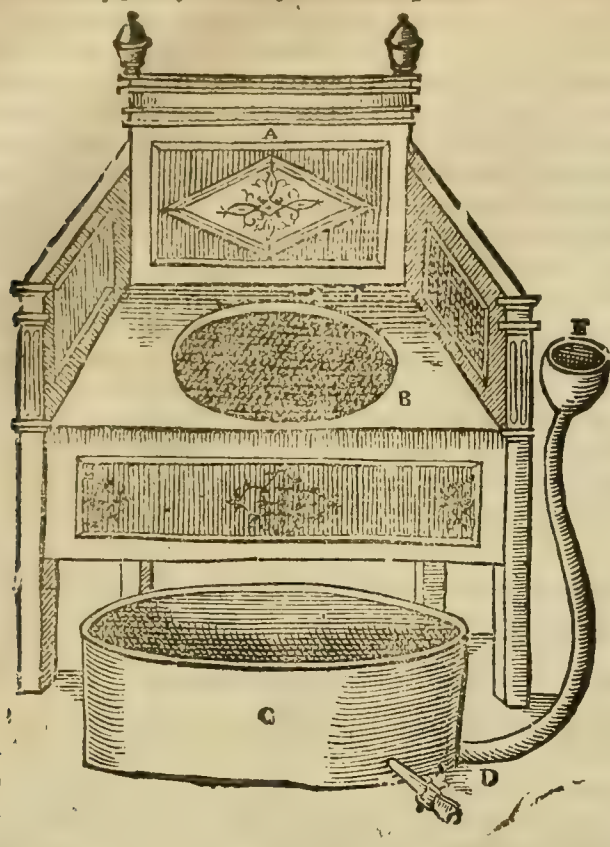
Signs of the ſtone ſtopping in the *ureter.*

Therefore let the patient if hee bee able mount upon a trotting horſ, and ride upon him the ſpace of ſom two miles, or if hee can have no opportunitie to do ſo, then let him run up and down a pair of ſtairs untill hee bee wearie, and even ſweat again ; for the ſtone by this exerciſe is oft-times ſhaken into the bladder ; then preſently ſhall bee given or taken by the mouth ſuch things as have a lenitive and relaxing facultie, as oil of ſweet almonds newly drawn and that without fire, and mixed with the water of pellitorie of the wall and white wine. Let frictions of the whole bodie bee made from above downwards with hot clothes ; let Ventoſes with a great flame bee applied one while to the loins, and another while to the bottom of the bellie, a little below the grieved place ; and unleſs the patient vomit of his own accord, or by the bitterneſs of his pain, let vomiting bee procured with a draught of water and oil luke-warm; for vomiting hath much force to drive down the ſtone by reaſon of the compreſſiom of the parts, which is cauſed by ſuch an endeavor : laſtly, if the ſtone deſcend not by the power of theſe remedies, then the patient muſt bee put into a *Semicupium*, that is a Half-bath, made of the following decoction. ℞. *malvæ, biſmal. cum toto an.* m. ii. *beton. naſturt. ſaxifrag. berul. parietar. violar. an.* m.iii *ſem. melonum, milii ſolis, alkekengi an.* ʒvi. *cicer. rub.* ℔.i. *rad. appii. gram. fœniculi, & eringii. an.* ℥iiii. *in ſufficienti quantitate aquæ pro inceſſu ; coquantur iſta omnia incluſa ſacco* ; herein let the patient ſit up to the navel : neither is it fit that the patient tarrie longer in ſuch a bath then is requiſite, for the ſpirits are diſſipated, and the powers reſolved by too long ſtay therein. But on the contrarie, if the patient remain as long as is ſufficient in theſe rightly made, the pain is mitigated, the extended parts relaxed, and the paſſages of the urine opened and dilated, and thus the ſtone deſcendeth into the bladder. But if it bee not mooved by this means any thing at all out of the place, and that the ſame total ſuppreſſion of urine do as yet remain, neither before the patient entred into the bath the putting of a *Catheter* into the bladder did any thing avail, yet notwithſtanding hee ſhall trie the ſame again after the patient is com out of the bath, that hee may bee throughly ſatisfied whether peradventure there may bee anie other thing in theſe firſt paſſages of the yard and neck of the bladder, which may with-hold the urine ; for the *Catheter* will enter far more eaſily, the parts beeing relaxed by the warmneſs of the bath : then inject ſom oil of ſweet almonds with a ſyringe into the *Uretbra* or paſſage of the yard ; whil'ſt all theſe things are in doing, let not the patient com into the cold air. But heer I have thought good to deſcribe a chair for a bath, wherein the patient may fitly ſit.

Remedies to force down the ſtone ſticking in the *ureter.*

A decoction for a bath.

*The figure of a Chair for a* Semicupium.




A. *Sheweth the whole frame of the Chair.*
B. *The hole wherein the patient muſt ſit.*
C. *The Ciſtern that hold's the water.*
D. *A Cock to emptie the water when it groweth cold.*
E. *A Funnel whereby to pour in warm water.*

There may alſo bee another decoction made for the bath, as thus: ℞. *rad. raph. alth. an.* ℔.ii. *rad. ruſc. petroſel. & aſparag. an.* ℔. i. *cumin. fœnicul. ameos an.* ℥iiii. *ſem. lini, fœnug. an.* ℥vi. *fol. marub. parietar. florum chamæm. melil. anethi. an.* m. ii. *bulliant omnia ſecundùm artem in aquæ ſufficienti, & vini albi odoriferi exiguâ quantitate ad conſumptionem tertiæ partis pro Semicupio.* Alſo the ſame decoction may bee uſed for gliſters, adding thereto two yolks of eggs, aud four ounces of oil of lillies, with ℥i. of oil of juniper, which hath a certain force to aſſwage the pain of the ſtone and collick. But a far leſs quantitie of the decoction in a gliſter muſt bee uſed in theſe diſeaſes, than uſually is appointed in other diſeaſes; otherwiſe there will bee danger leſt the guts beeing diſtended ſhould more preſs upon the kidnies and ureters, troubled in ſom ſort with inflammation, and ſo increaſ the pain and other ſymptoms. This following cataplaſm ſhall bee profitably applied to the grieved place, to wit, the loins or flanks and bottom of the bellie, for it is verie powerful to aſſwage pain, and held forwards the falling down of the ſtone. ℞. *rad. alth. & raphani, an.* ℥iiii. *pariet. fœnic. ſenecionis, naſturt. berul. an.* m.i. *herniariæ* m.ß. *omnibus in aquâ ſufficienti decoctis, & deinde contritis, adde olei aneth. chamæm. & pingued. cuniculi, an.* ℥ii. *farin. cicer. quantum ſufficit, fiat cataplaſma ad uſum prædictum.*

An anodine Cataplaſm.

Signs of the ſtone fallen out of the *ureter* into the bladder.

After, by theſe means, the ſtone forced out of the *ureter* is fallen into the bladder, the pain preſently (if there bee but one ſtone, for ſomtimes more with much gravel do again fall into the *ureter*) is mitigated, and then the patient is troubled with an itching and pricking at the end of his yard and fundament. Therefore then unleſs hee bee verie weak, it is fit that hee ride and walk a foot, and take ℥iv. of *ſpecies Lithontribon* in four doſes with white wine, or the broth of red Cicers three hours before dinner and ſupper. Beſides, let him plentifully drink good wine, and after hee hath drunk, let him hold in his urine as long as hee can; that ſo it beeing gathered in great plentie, it may preſently thruſt the ſtone out of the bladder with the more force; for which purpoſe you may alſo inject the following liquor into the bladder. ℞. *ſyrupi capill. ven.* ℥i. *aquæ alkekengi* ℥iii. *olei ſcorpionum.* ℥ß. Let it bee injected into the bladder with a ſyringe.

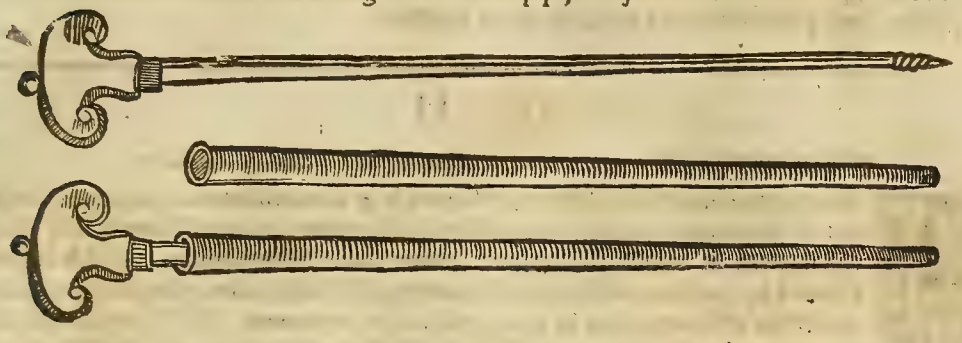
## CHAP. XXXIX.

*What muſt bee don the ſtone beeing fallen into the neck of the bladder, or paſſage of the yard.*

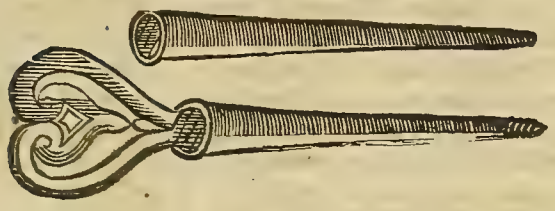
After the ſtone is fallen out of the capacitie of the bladder, and ſtop's in the neck thereof, or paſſage of the yard, the Surgeon ſhall have a ſpecial care that hee do not force or thruſt back the ſtone from whence it came, but rather that hee preſs it gently with his fingers to the end of the yard, the paſſage beeing firſt made ſlipperie by injecting ſom oil of ſweet almonds. But if it ſtop in the end of the *Glans*, it muſt bee plucked out with ſom crooked inſtrument; to which if it will not yeeld

yeeld, a Gimblet with a pipe or case thereto, shall bee put into the passage of the yard, and so it shall bee gotten out, or elf broken to pieces by the turning or twining about of the Gimblet, which I remember I have divers times attempted and don; for such Gimblets are made with sharp scrues, like ordinarie gimblets.

*The delineation of a Gimblet made to break the stones in the passage of the yard, together with its pipe, or case.*



*The effigies of another lesser Gimblet.*



Verily what Gimblets soever are made for this business, their bodie or point must bee no thicker then a small *probe*; least whil'st they are forced or thrust into the *Urethra*, or urinarie passage, they might hurt the bodies next unto them by their violent entrance.

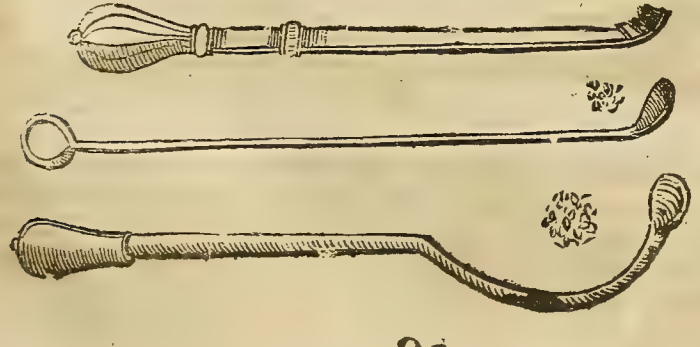
## CHAP. XL.

*What cours must bee taken, if the stone sticking in the* Urethra, *or urinarie passage, cannot bee gotten out by the fore-meutioned arts.*

BUt if the stone bee more thick, hard, rough and remote from the end of the yard, then that it may bee gotten out by the means formerly mentioned in the precedent Chapter, and if that the urine bee wholly suppreſt therewith; then must you cut the yard upon the side with a straight wound: for you must not make incision on the upper part, for fear of a flux of blood, for a large vein and arterie lieth there-under; nor in the lower part, for so it would scarce ever heal again, for that it is a bloodless part, and besides, the continual and acrid falling of the urine would hinder the agglutination: wherefore the incision must bee made on the side, on that part whereas the stone most resist's and swell's out. For that part is the more fleshie; yet first the end of the skin of the prepuce must bee much drawn up so to cover the *Glans*, which beeing don, the *Urethra* shall bee tied with a thred a little above the stone, that so the stone may bee staied there, and may not fall back again. Therefore then, incision beeing made, the stone must bee taken forth, and the skin which was drawn more violently to cover the *Glans*, is to bee let go back again; for so it will com to pass that a whole part of the skin may cover the cut-yard, and so it may bee the more speedily united, and the urine may naturally flow out. I have by this means oft-times taken forth the stone with the instruments heer delineated.

When the yard may bee safely cut.

*Instruments fit to take the stone forth of the opened* Urethra, *or urinarie passage of the yard.*



An agglutinative medicine.

Then for the agglutination, if need require, it will bee requiſite to ſew up the lips of the wound, and applie this agglutinative medicine following. ℞. *tereb. venet.* ℥iiii. *gum. elemi,* ℥i. *ſang. dracon. & maſtic. an.* ℥ß. *fiat medicamentum ut dictum eſt:* then the whole yard muſt bee covered over with a repercuſſive medicine made of the whites of eggs, with the powder of bole armenick, aloës, *farina volatilis,* and oil of roſes. Laſtly, if need ſo require, a wax-candle, or leaden ſtring anointed with Venice turpentine ſhall bee thruſt into the *Urethra,* to haſten the agglutination, and retain the natural ſmoothneſs and ſtraightneſs of the urinarie paſſage, leaſt peradventure a caruncle grow therein.

How to haſten the agglutination.

## CHAP. XLI.

*What manner of ſection is to bee made when a ſtone is in a boy's bladder.*

Hitherto wee have ſhewed, by what means it is convenient to draw ſmall ſtones out of the ureter, bladder and paſſage of the urine; now will wee briefly ſhew the manner of takeing of greater ſtones out of the bladder, which is performed by inciſion and iron inſtruments, and I will deliver the practice thereof firſt in children, then in men, and laſtly in women. Firſt therefore let the Surgeon take the boy (upon whom it is determined the work ſhall bee performed) under the arm-holes, and ſo give him five or ſix ſhakes, that ſo the ſtone may deſcend the more downwards to the neck of the bladder. Then muſt you cauſe a ſtrong man, ſitting upon an high ſeat, to lay the childe upon his back with his face from him-ward, haveing his hips lying upon his knees. The childe muſt lie ſomwhat high, that hee may breathe the freelier, and let not the nervous parts bee too much ſtretched, but let all parts bee looſe and free for the drawing forth of the ſtone. Furthermore, it is fit that this ſtrong man, the childe's legs beeing bended back, wiſh the childe, that puttings his legs to his hams, that hee draw them up as much as hee can, and let the other bee ſure hee keep them ſo; for this ſite of the childe much conduceth to well performing of the work. Then let the Surgeon thruſt two of the fingers of his left hand as far into the childe's fundament as hee is able; but let him with his other hand preſs the lower bellie, firſt wrapping a cloth about his hand, that ſo the compreſſion may bee the leſs troubleſom, and leaſt inflammation ſhould happen rather by this means then by the inciſion. Now the compreſſion hath this uſe, to cauſe the ſtone to deſcend out of the bottom of the bladder into the neck thereof under the *os pubis,* whither after it is arrived, it muſt bee there kept, and as it were governed by the command of your hand, leaſt it ſhould ſlide from that place whereto you have brought it. Theſe things thus don, nothing now remaineth, but that the Surgeon, with a wound ſom two fingers breadth diſtant from the fundament, cut through all the fleſh even to the ſtone on the left ſide of the *Perinæum.* But in the *interim,* let him beware that hee hurt not the *inteſtinum rectum*; for it may, and uſually doth happen, that whil'ſt the ſtone is brought out of the bottom of the bladder to the neck thereof, this gut is doubled in: now, if it bee cut with your inciſion-knife, it cometh to paſs that the excrements may ſomtimes com out at the wound, and the urine by the fundament, which thing hath in manie hindred the agglutination and conſolidation of the wound; yet in ſom others it hach don little harm, becauſ in this tender age manie things happen, which may ſeem to exceed nature: the inciſion beeing made, the ſtone muſt bee plucked forth with the inſtrument heer expreſſed.

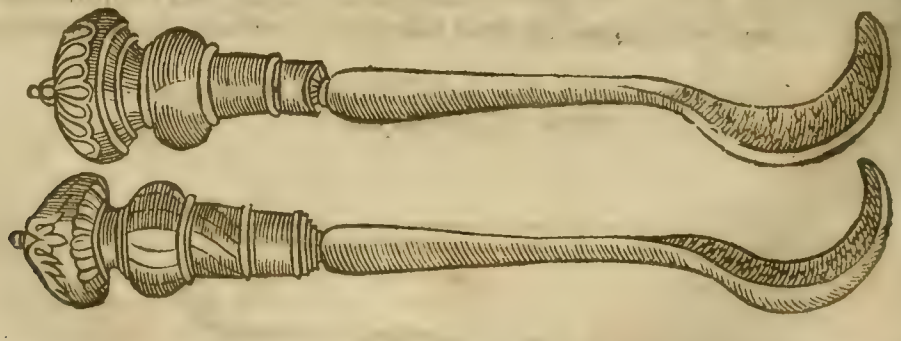
Why the boy muſt bee ſhaken before cutting.

How to place the childe before diſſection.

Where to divide the *perinæum.*

Nature verie powerful in children.

*Hooks to pull ſtones forth of children's bladders.*



The ſtone beeing drawn out, a ſmall pipe ſhall bee put into the wound, and there kept for ſom ſpace after, for reaſons heerafter to bee delivered; then his knees ſhall bee bound together, for thus the wound will the ſooner cloſe and bee agglutinated. The reſidue of the cure ſhall bee performed by reduceing the general cure of wounds, to the particular temper of the childe's age, and the peculiar nature of the childe in cure.

General rules muſt bee reduced to particular bodies.

CHAP.

## CHAP. XLII.

*How to cut men, for the takeing out of the stone in the bladder.*

SEeing wee cannot otherwise help such men as have stones in their bladders, wee must com to the extreme remedie, to wit, cutting. But the patient must first bee purged, and if the case require, draw som blood; yet must you not immediately after this, or the day following hasten to the work: for the patient cannot but bee weakned by purgeing and bleeding. Also it is expedient for som daies before to foment the privities with such things as relax and soften, that by their yeelding, the stone may the more easily bee extracted. Now the cure is thus to bee performed: The patient shall bee placed upon a firm table or bench with a cloth manie times doubled under his buttocks, and a pillow under his loins and back, so that hee may lie half upright with his thighs lifted up, and his legs and heels drawn back to his buttocks. Then shall his feet bee bound with a ligature of three fingers breadth cast about his ankles, and with the heads thereof beeing drawn upwards to his neck, and cast about it, and so brought downwards, both his hands shall bee bound to his knees, as the following figure sheweth.

What to bee don before dissection.

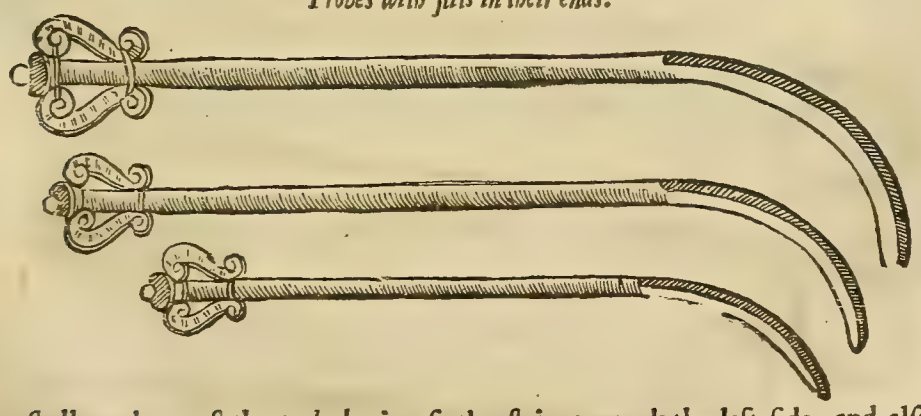
How to lay the patient.

*The figure of a man lying readie to bee cut for the stone.*

The patient thus bound, it is fit you have four strong men at hand; that is, two to hold his arms, and other two who may so firmly and straightly hold the knee with one hand, and the foot with the other, that hee may neither moov his limbs, nor stir his buttocks, but bee forced to keep in the same posture with his whole bodie. Then the Surgeon shall thrust into the urenarie passage even to the bladder, a silver or iron and hollow *probe*, anointed with oil, and opened or slit on the out-side, that the point of the knife may enter thereinto, and that it may guide the hand of the workman, and keep the knife from pierceing anie farther into the bodies lying there-under. The figure of this *probe* is heer expreſt.

Why the *probe* must bee slit on the out-side.

*Probes with slits in their ends.*



Hee shall gently wrest the *probe*, beeing so thrust in, towards the left side, and also hee who standeth on the patient's right hand, shall with his left hand gently lift up his cods, that so in the free and open space of the left side of the *perinæum*, the Surgeon may have the more libertie to make the incision upon the *probe*, which is thrust in and turned that way. But in making this incision, the Surgeon must bee careful that hee hurt not the seam of the *perinæum* and fundament. For if that seam bee cut, it will not bee easily consolidated, for that it is callous and bloodless, therefore the urine would continually drop forth this way. But if the wound bee made to near the fundament, there is danger, least by forcible plucking forth of the stone hee may break som of the hemorrhoid veins, whence a bleeding may ensue, which is scarce to bee stopped by anie means, or that hee may rend the sphincter-

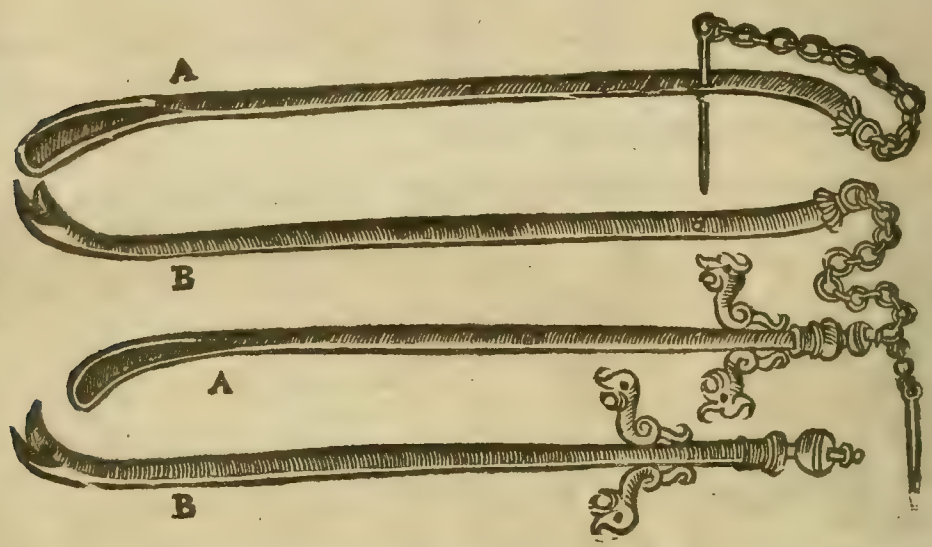
Why the seam of the *perinæum* must not bee cut.

Where to make the wound to take forth the ſtone.

That which is torn is ſooner healed then that which is cut.

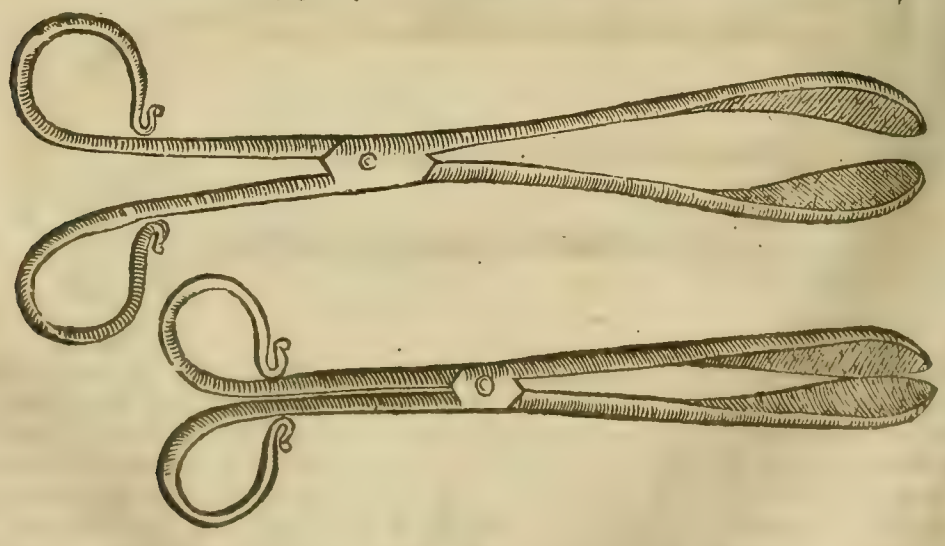
muſcle, or bodie of the bladder, ſo that it can never bee repaired. Therefore it muſt bee made the ſpace of two fingers from the fundament, according to the ſtraightneſs of the fibres, that ſo it may bee the more eaſily reſtored afterwards. Neither muſt the inciſion thus made, exceed the bigneſs of ones thumb, for that it is afterwards enlarged by putting in the Crow's beak and the dilater, but more by the ſtone as it is plucked forth. But that which is cut, is neither ſo ſpeedily nor eaſily healed up, as that which is torn. Then preſently put into the wound ſom one of theſe ſilver inſtruments delineated heer below, and called by the name of *Guiders*, for that they ſerv as guides to the other inſtruments which are to bee put into the bladder; theſe are made with a round and prominent head, whereby it may bee put into the deſcribed cavitie of the *probe*, and they are noted by theſe letters, A.A. then there are others marked with the letters, B.B. and called by the like name, and are to bee put under the former, beeing made forked at the end, that ſo it may, as it were, embrace the end of the former.

*The figures of Ghiders of two ſorts.*




Now the *probe* is to bee drawn forth, and the guiders to bee thruſt and turned up and down in the bladder, and at length to bee ſtaied there by putting in the pin; yet ſuch guiders as want a pin are fitter for the hand, and are by ſom called *ſpathæ*. Then muſt they bee held betwixt the Surgeon's fingers. It will bee alſo neceſſarie for the Surgeon to put another inſtrument called the Duckſ-bill between the two guiders into the capacitie of the bladder; hee muſt thruſt it in ſomwhat violently, and dilate it ſo thruſt in with both his hands, turning it everie way to enlarge the wound as much as ſhall bee ſufficient for the admitting the other inſtruments which are to bee put into the bladder; yet it is far better for the patient, if that the wound may with this one inſtrument bee ſufficiently dilated, and the ſtone pulled forth with the ſame without the help of anie other.

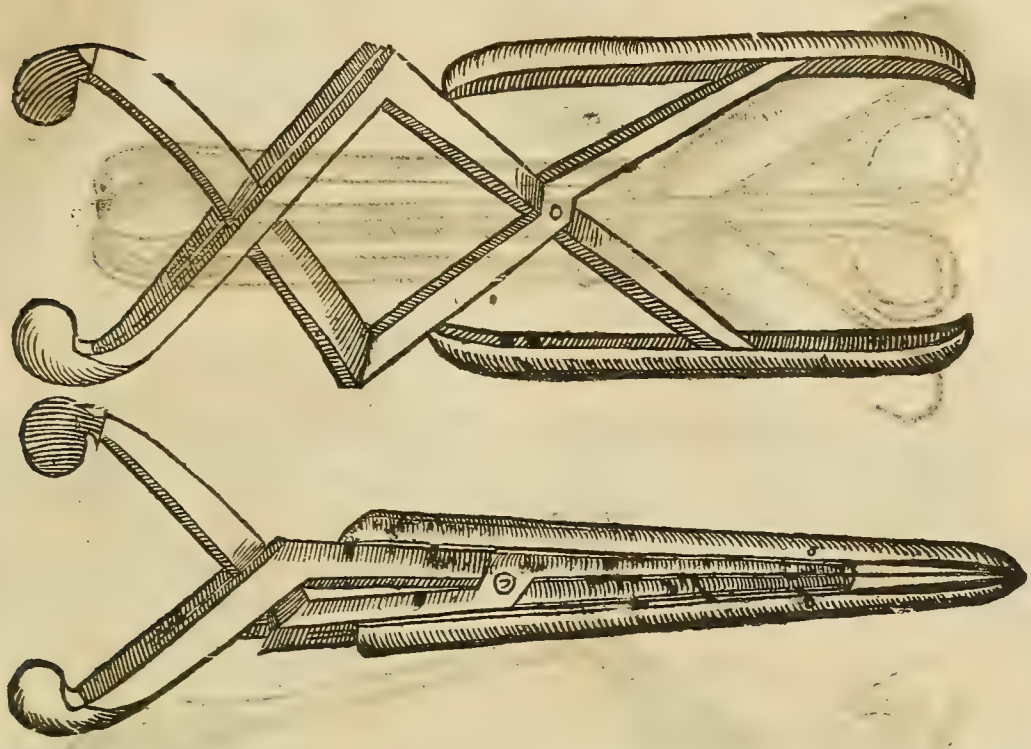
*The effigies of an inſtrument called a Ducks-bill.*



Which if you have not in a readineſs, and the largeneſs of the ſtone require more dilatation, then muſt you put in this dilater; for beeing put into the bladder, and the handle preſſed together, it will dilate the inciſion as much as you deſire.

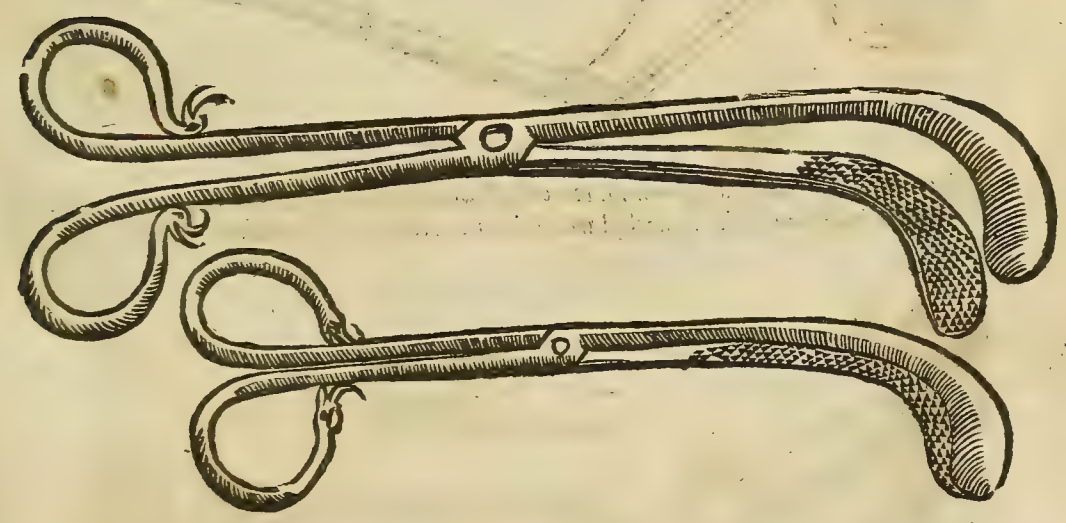
The

*The figure of a Dilater ſhut and opened.*



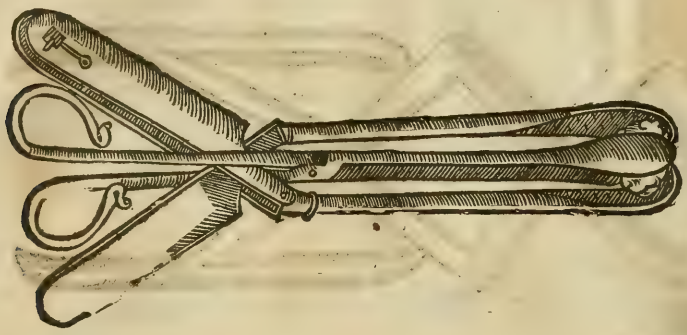
The wound by the help of this inſtrument beeing dilated as much as is ſufficient, then put in the ſtraight Duckſ-bill before deſcribed, or the crooked heer expreſt.

*Crooked* Forcipes's *like a Ducks-bill.*

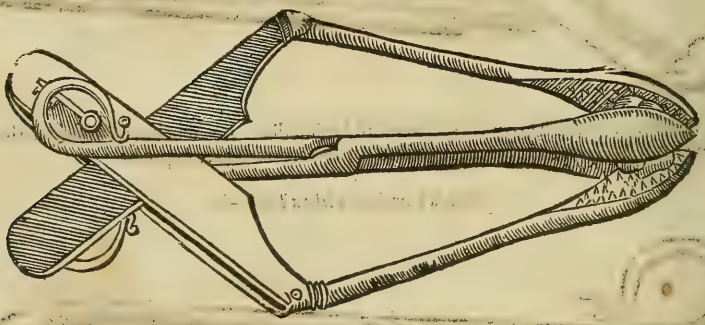


The ſtone may bee ſought and taken hold of with theſe inſtruments, and beeing taken hold on, the branches of the inſtrument ſhall bee tied together, leaſt they ſhould ſuffer that to ſlide away which they have once taken hold of. Neither ſhall the ſtone bee ſuddenly plucked out, but eaſily ſhaken to and again, and at length gently drawn forth. Yet you muſt beware that you do not preſs it too ſtraightly in the *forceps*, leaſt you ſhould break it in pieces: Som, leaſt it ſhould ſlip away, when they have once taken hold thereof, put their two fingers into the fundament, and put them above the ſtone that it may not fall out, nor ſlip back again, which I think conduceth much to the eaſie extraction of the ſtone. There are others who ſtrengthen this comprehenſion by putting in on each-ſide above and below theſe winged inſtruments, ſo that the ſtone can ſlip forth on no ſide.

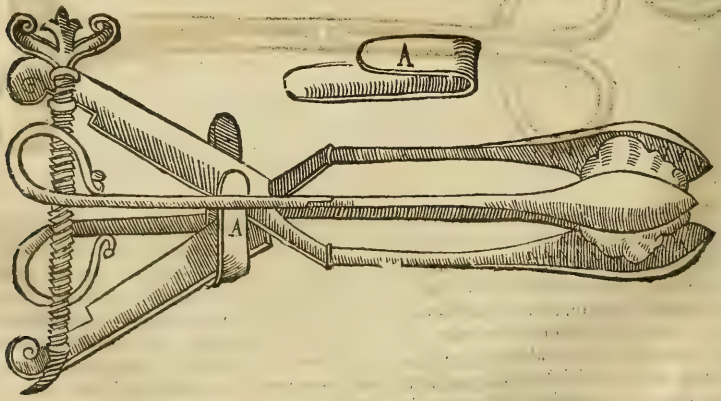
*Winged inſtruments to hold the ſtone with the Duck's-beak.*



*The figure of another.*



*The figure of another winged inſtrument, the end of whoſe handle is faſtened by a ſcrue, as alſo a bended iron-plate, which is marked with this letter* A. *for the firmer holding thereof.*




A note of more ſtones then one.

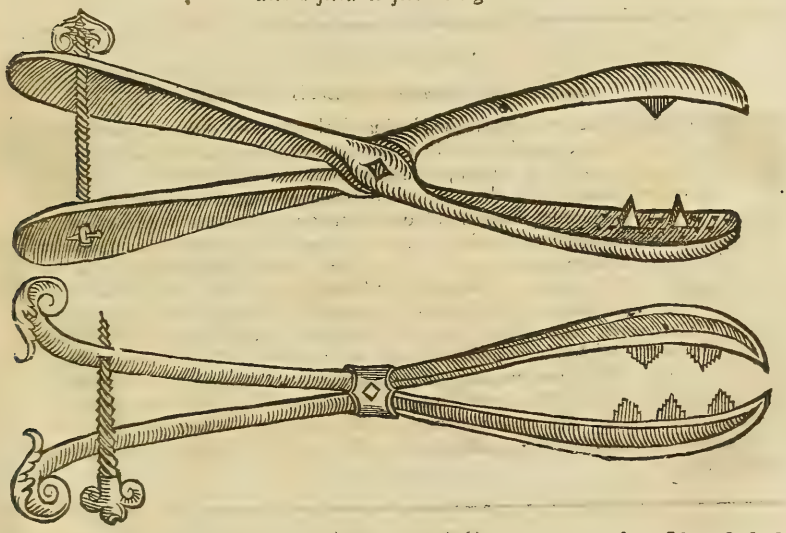
After the ſtone is by theſe means drawn forth, obſerv diligently whether it bee worn on anie ſide, and as it were levigated; for that happeneth by the wearing or rubbing of one or more ſtones upon it; yet there is no ſurer way to know this, then by ſearching with a *Catheter*. The one end of the following inſtrument may ſupplie the want of a *Catheter* or probe, and the other may ſerv for a ſcoop or cleanſer.

*A cleanſer*

*A cleanser or scoop whereby you may search whether there bee anie more stones behinde, as also cleanser purge the bladder from gravel, clots of blood, and other such bodies, as use to remain behinde after the drawing forth of the stone.*

For if other stones remain behinde, they shall bee drawn forth as the former, which bee- How to cleanse the bladder.
ing don, the end of the instrument, which is crooked and hollowed like a scoop or spoon, shall bee thrust by the wound into the bladder, and therewith you shall gather together and take out what gravel soever, clotted blood, and the like refuse as shall bee there, for that they may yeeld matter for another stone. But if you finde that the stone which is in the bladder bee too great, so that it may not bee plucked forth without great and fearful rending of the bladder, it will bee better to take hold thereof with this Crows bill and so break it to peeces. How to break a stone that cannot bee taken out whole and at once.

*The effigies of a toothed Crow's-bill made neatly to break greater stones, with a screw to force it together.*



This Crows-bill hath onely three teeth, and those sharp ones on the inside, of which two are placed above, and one below, which is the middle-most, so that it falleth between the two upper. When the stone is broken, all the peeces thereof must bee taken forth, and wee must have a special care, lest any peece thereof lie hid; for that in time, increased by the access of a tough and viscuous matter, or conjoined with other fragments by the interposition of the like matter as glew, may rise to a stone of a large bigness.

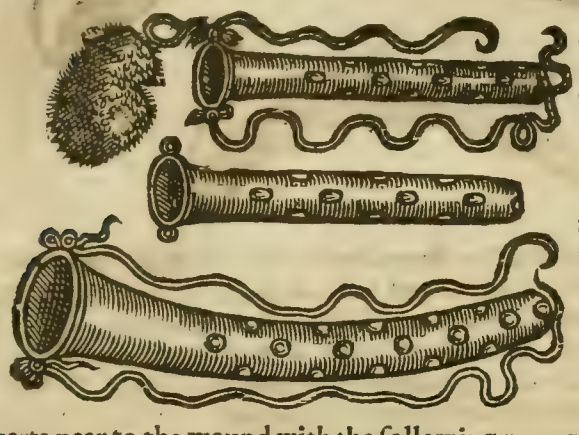
## CHAP. XLIII.

*What cure must bee used to the wound, when the stone is taken forth.*

THe stone beeing drawn out, if the greatness of the wound so require, it shall Of sewing the wound when the stone is taken forth.
have one or two stitches with a needle and threed, leaving onely so much space as shall bee sufficient to put in a pipe for the use wee shall hereafter shew; your threed must bee of crimson silk waxed, and let it not bee too small, least it by bindeing should cut asunder the fleshie lips of the wound, or rot in a short time, either by the moisture of the urine, or matter flowing from the ulcer. Therefore you shall

ſhall take up much fleſh with the skin in ſewing it, leaſt the lips of the wound beeing torn, your labor proov in vain, and ſo you are forced to trouble the patient with makeing a new one. Things beeing thus performed, a ſilver pipe ſhall bee put through the wound into the bladder, whereof I have here given you divers forms, that you may take your choice, & ſo fit them to the wounds, and not the wounds to them, which oft-times in want of inſtruments the Surgeons are forced to do, to the great harm of the patient.

*Silver pipes to bee put into the bladder when the ſtone is drawn out.*



Theſe muſt have no holes in their ſides (as thoſe here expreſſed) but onely in their ends, that all the matter of the wound, and the filth gathered and concrete in the bladder may flow and bee carried forth this way. When cleer urine ſhall begin to flow out of the wound, there ſhall bee no more need of a pipe; therefore if you continue it and keep it longer in the wound, there is ſom danger leaſt nature accuſtomed to that way, may afterwards neglect to ſend the water through the *Urethra*, or urinarie paſſage. Neither muſt you forget to defend the parts near to the wound with the following repercuſſive medicine, to hinder the defluxion and inflammation, which are incident by reaſon of the pain. ℞. *album ovorum.nu.*iii. *pul. boli armeni, ſanguinis dracon. an.*℥iii. *olei roſ.* ℥i. *pilorum leporinorum quantum ſufficit*, make a medicine of the conſiſtence of honey.

A repercuſſive medicine.

## CHAP. XLIV.

*How to lay the patient after the ſtone is taken away.*

ALl things which wee have recited beeing faithfully and diligently performed, the patient ſhall be placed in his bed, laying under him as it were a pillow filled with bran, or oat chaff, to drink up the urine which floweth from him. You muſt have divers of theſe pillows, that they may bee changed as need ſhall require. Somtimes after the drawing forth of the ſtone, the blood in great quantitie falleth into the Cod, which unleſs you bee careful to provide againſt, with diſcuſſing, drying and conſumeing medicines, it is to bee feared that it may gangrenate. Wherefore if anie accidents happen in cureing theſe kinde of wounds, you muſt diligently withſtand them. After ſom few daies a warm injection ſhall bee caſt into the bladder by the wound, conſiſting of the waters of plantain, night-ſhade and roſes, with a little ſyrup of dried roſes. It will help to temper the heat of the bladder cauſed both by the wound and contuſion, as alſo by the violent thruſting in of the inſtruments. Alſo it ſomtimes happen's, that after the drawing forth of the ſtone, clots of blood and other impuritie may fall into the urinarie paſſage, and ſo ſtop the urine that it cannot flow forth. Therefore you muſt in like ſort put a hollow *probe* for ſom daies into the *urethra*, that keeping the paſſage open, all the groſſer filth may flow out together with the urine.

Remedies for the Cod, leaſt it gangrenate.

## CHAP. XLV.

*How to cure the wound made by the inciſion.*

YOu muſt cure this wound after the manner of other bloodie wounds, to wit, by agglutination and cicatrization, the filth, or ſuch things as may hinder, beeing taken away by detergent medicines. The patient ſhall haſten the agglutination if hee lie croſs-legged, & keep a ſlender diet until the ſeventh or ninth day bee paſt. Hee muſt wholly abſtain from wine, unleſs it bee verie weak; in ſtead thereof let him uſe a decoction of barlie and licoriſh, or mead, or water and ſugar, or boiled water mixed with ſyrrups of dried roſes, maidenhair, and the like. Let his meat bee panado, raiſons, ſtewed prunes, chickens boiled with the cold ſeeds, purſlain, ſorrel, borage, ſpinage, and the like. If hee bee bound in his bellie, a Phyſician ſhall bee called, who may help it, by appointing either *Caſſia*, a glyſter, or ſom other kinde of medicine as hee ſhall think good.

What things haſten the union.

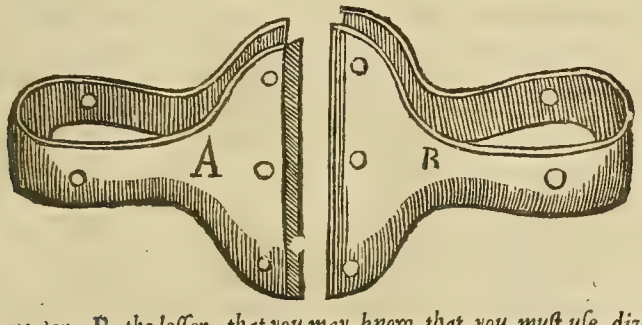
CHAP.

## CHAP. XLVI.

*What cure is to bue used to Ulcers, when as the urine flow's through them, long after the stone is drawn out.*

MAnie, after the stone is drawn out, cannot have the ulcer consolidated, therefore the urine flow's out this way continually by little & little, and against the patient's will dureing the rest of his life, unless the Surgeon help it. Therefore the callous lips of the wound must bee amputated, so to make a green wound of an old ulcer; then must they bee tied up, & bound with the instrument wee term a *Retinaculum* or stay; this must bee perforated with three holes, answering to three other on the other side; needles shall bee thrust through these holes, takeing hold of much flesh, and shall bee knit about it, then glutinative medicines shall bee applied, such as are Venice Turpentine, gum *Elemi*, *sanguis draconis*, bole armenick and the like; after five or six dais the needles shall bee taken out, and also the stay taken away. For then you shall finde the wound almost glewed, and there will nothing remain but onely to cicatrize it. How to make a fresh wound of an old ulcer.

*The figure of a* Retinaculum, *or stay.*




A. *shew's the greater.* B. *the lesser, that you may know that you must use divers according to the different bigness of the wound.*

If a *Retinaculum* or stay bee wanting, you may conjoin the lips of the wound after this following manner. Put two quills somwhat longer then the wound, on each side one, and then presently thrust them through with needles haveing thred in them, takeing hold of the flesh between, as often as need shall require, then tying the thred upon them. For thus the wound shall bee agglutinated, and the fleshie lips of the wound kept from beeing torn, which would bee in danger if the needle and thred were onely used. What to do in want of a stay.

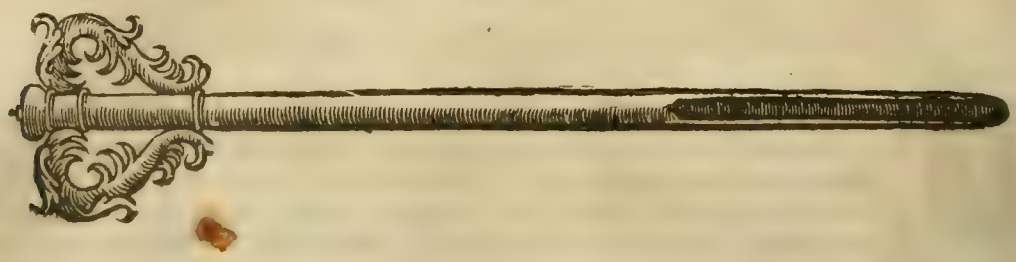
## CHAP. XLVII.

*How to take stones out of women's bladders.*

WEe know by the same signs that the stone is in a woman's bladder as wee do in a man's, yet it is far more easily searched by a *Catheter*, for that the neck of the bladder is the shorter, broader and the more streight. Wherefore it may not onely bee found by a *Catheter* put into the bladder, but also by the fingers thrust into the neck of the womb, turning them up towards the inner side of the *Os pubis*, and placeing the sick woman in the same posture as wee mentioned in the cure of men. Yet you must observ that maids younger then seven yeers old, that are troubled with the stone, cannot bee searched by the neck of the womb, without great violence. Therefore the stone must bee drawn from them by the same means as from boies, to wit, by thrusting the fingers into the fundament; for thus the stone beeing found out, and the lower bellie also pressed with the other hand, it must bee brought to the neck of the bladder, and then drawn forth by the forementioned means. Yet if the riper yeers of the patient permit it to bee don without violence, the whole work shall bee more easily and happily performed, by putting the fingers into the neck of the womb, for that the bladder is nearer the neck of the womb, then it is to the right gut. Wherefore the fingers thus thrust in, a *Catheter* shall bee presently put into the neck of the bladder: This *Catheter* must bee hollow, or slit on the outside like those before described but not crooked, but straight, as you may perceiv by the following figure. How to search for the stone in women.

*A* Cathe-

*A* Catheter, *upon which, beeing put into the bladder, the neck thereof may bee cut, to draw out a ſtone from a woman.*



Upon this inſtrument the neck of the bladder may bee cut, and then with the *Dilater* made for the ſame purpoſe, the inciſion ſhall bee dilated as much as need require's; yet with this caution, that ſeeing the neck of a womans bladder is the ſhorter, it admit's not ſo great dilatation as a mans, for otherwiſe there is danger that it may com to the bodie of the bladder, whence an involuntarie ſhedding of the water may enſue and continue thereafter. The inciſion beeing dilated, the Surgeon putting one or two of his fingers into the neck of the womb, ſhall preſs the bottom of the bladder, and then thruſt his crooked inſtruments or *forcipes* in by the wound, and with theſe hee ſhall eaſily pluck out the ſtone, which hee ſhall keep with his fingers from ſlipping back again. Yet *Laurence Collo* the King's Surgeon, and both his ſons (then whom I do not know whether ever there were better cutters for the ſtone) do otherwiſe perform this operation; for they do not thruſt their fingers into the fundament or neck of the womb, but contenting themſelvs with putting in onely the guiders (whereof wee formerly made mention) into the paſſage of the urine, they preſently thereupon make a ſtraight inciſion directly at the mouth of the neck of the bladder, and not on the ſide, as is uſually don in men. Then they gently by the ſame way thruſt the *forcipes* hollowed on the out-ſide formerly delineated, and ſo dilate the wound by tearing it as much as ſhall bee ſufficient for the drawing of the ſtone forth of the bladder. The reſidue of the cure is the ſame with that formerly mentioned in men: yet this is to bee added, that if an ulcer grow in the neck of the bladder by reaſon of the rending it, you may by putting in the *ſpeculum matricis*, dilate the neck of the womb, that fitting remedies may bee applied with the more eaſe.

## CHAP. XLVIII.

### *Of the ſuppreſſion of the Urine by internal cauſes.*

In ſuppreſſion of the urine wee muſt not preſently flie to diureticks.

BEſides the fore-mentioned cauſes of ſuppreſſed urine, or difficultie of making of water, there are manie other, leaſt anie may think that the urine is ſtop't onely by the ſtone or gravel, as Surgeons think, who in this caſe preſently uſe diureticks. Therefore the urine is ſuppreſt by external and internal cauſes. The internal cauſes are clotted blood, tough phlegm, warts, caruncles bred in the paſſages of the urine, ſtones, and gravel; the urine is ſomtimes ſuppreſt, becauſe the matter thereof, to wit, the ſerous or whayiſh part of the blood, is either conſumed by the feveriſh heat, or carried other waies by ſweats or a ſcouring; ſomtimes alſo the flatulencie there contained, or inflammation ariſing in the parts made for the urine and the neighboring members, ſuppreſſe's the urine. For the right gut, if it bee inflamed, intercept's the paſſage of the urine, either by a tumor whereby it preſſeth upon the bladder, or by the communication of the inflammation. Thus by the default of an ill-affected liver, the urine is oft-times ſuppreſt in ſuch as have the dropſie; or elſ by dulneſs or decay of the attractive, or ſeparative facultie of the reins by ſom great diſtemper, or by the default of the animal-facultie, as in ſuch as are in a phrenſie, lethargie, convulſion, apoplexie. Beſides alſo a tough and viſcid humor falling from the whole bodie into the paſſages of the urine, obſtruct's and ſhut's up the paſſage. Alſo too long holding the water ſomtimes cauſe's this affect. For when the bladder is diſtended above meaſure, the paſſage thereof is drawn together, and made more ſtraight: heerto may bee added, that the too great diſtenſion of the bladder is a hinderance that it cannot uſe the expulſive facultie, and ſtraiten it ſelf about the urine to the excluſion thereof; heerto alſo pain ſucceed's, which preſently deject's all the faculties of the part which it ſeizeth upon. Thus of late a certain young man, riding on horſ-back before his miſtreſs, and therefore not dareing to make water, when hee had great need ſo to do, had his urine ſo ſuppreſt, that returning from his journie home into the citie, hee could by no means poſſible make water. In the mean time hee had grievous pain in the bottom of his bellie and the *perinæum*, with gripeings, and a ſweat all over his bodie, ſo that hee almoſt ſwooned. I beeing called, when I had procured him to make water by putting in an hollow *Catheter*, and preſſing the bottom of his bellie, whereof hee forthwith made two pintes; I told them that it was not occaſioned by the ſtone, which notwithſtanding the ſtanders by imagined to bee the occaſion of that ſuppreſſion of urine.

Why the too long holding the urine cauſeth the ſuppreſſion thereof.

An hiſtorie.

urine. For thence forward there appeared no signs of the stone in the youth, neither was hee afterwards troubled with the stopping of his urine.

## CHAP. XLIX.

*A digression concerning the purgeing of such things as are unprofitable in the whole bodie by the the urine.*

I Think it not amiss to testifie by the following historie, the providence of nature in expelling by urine such thing as are unprofitable in the whole bodie. *Mounsieur Sarret* the King's secretarie was wounded in the right arm with a pistol-bullet; manie and malign symptoms happened thereupon, but principally great inflammations, flowing with much *sanies* and *pus* or quitture: it somtimes happened that without anie reason this purulent and sanious efflux of matter was staied in inflammation; whereof while wee sollicitously inquired the cause, wee found both his stools and water commixed with much purulent filth, and this through the whole course of the disease, whereof notwithstanding by God's assistance hee recovered, and remain's whole and sound; wee observed that as long as his arm flowed with this filthie matter, so long were his excrements of the bellie aud bladder free from the sanious and purulent matter: as long on the contrarie as the ulcers of the arm were drie, so long were excrements of the guts and bladder sanious and purulent. The same accident befel a Gentleman called *Mounsieur de la Croix*, who received a deadlie wound with a sword on the left arm, though *German Chaval* and *Master Rasis* most expert Surgeons, and others, who together with meee had him in cure, thought it was not so for this reason, becaus the *pus* cannot run so long a way in the bodie, neither if it it were so, could that bee don without the infection and corruption of the whole mass of blood, whil'st it flow's through the veins; therefore to bee more probable that this quantitie of filth, mixed with excrements & urine, flowed out by the default of the liver, or of som other bowel, rather then from the wounded arm: I was of a contrarie opinion for these following reasons. First for that which was apparently seen in the patient; for as long as the excrement and urine were free from this purulent matter, so long his arm plentifully flowed therewith; this on the contrarie beeing drie, much purulent was voided both by stool and urine. Another was, that as our whole bodie is perspirable, so it is also (if I may so term it) confluxible. The third was an example taken from the glasses which the French term *Monte-vins* (that is, Mount-wines) for if a glas that is full of wine bee set under another that is fill'd with water, you may see the wine rais it self out of the lower vessel to the upper through the mid'st of the water, and so the water descend through the mid'st of the wine, yet so, that they do not mix themselvs, but the one take and posses's the place of the other. If this may bee don by art, by things onely natural, and to bee discerned by our eies, what may bee don in our bodies, in which by reason of the presence of a more noble soul, all the works of nature are far more perfect? What is it which wee may despair to bee done in the like case? For doth not the laudable blood flow to the guts, kidnies, spleen, bladder of the gall, by the impuls of nature together with the excrements, which presently the parts themselvs separate from their nutriment? Doth not milk from the breasts flow somtimes forth of the wombs of women lately delivered? Yet that cannot bee carried down thither, unless by the passages of the mammillarie veins and arteriers; which meet with the mouths of the vessels of the womb in the middle of the straight muscles of the *Epigastium*. Therefore no marvel if according to *Galen* the *pus* unmix't with the blood flowing from the whole bodie by the veins and arteries into the kidnies and bladder, bee cast forth together with the urine. These and the like things are don by nature, not taught by anie counsel or reason, but onely assisted by the strength of the segregateing and expulsive facultie; and certainly wee presently dissecting the dead bodie, observed that it all, as also all the bowels thereof, were free from inflammation and ulceration, neither was there anie sign of impression of anie purulent matter in anie part thereof.

An historie.

An historie.

How the *pus* may flow from the wounded arm by the urine and excrements.

*Lib. de loc. affec. 6. cap. 4.*

## CHAP. L.

*By what external causes the urine is suppresst; and prognosticks concerning the suppression thereof.*

THere are also manie external causes, through whose occasion the urine may bee suppresst. Such are batheing and swimming in cold water; the too long continued application of Narcotick medicines upon the reins, *perinæum* and share; the use of cold meats and drinks, and such other like. Moreover, the dislocation of som *Vertebra* of the loins to the inside, for that it presseth the nervs dissheminated thence into the bladder; therefore it causeth a stupiditie or numness of the bladder. Whence it is, that it cannot perceiv it self to bee vellicated by the acrimonie of the urine, and consequently it is not stirred up to the expulsion thereof. But from whatsoever

Why the dislocation of a *vertebra* of the loins may caus a suppression of urine.

Why the ſuppreſſion of the urine becom's deadly.

ſoever cauſ the oppreſſion of the urine proceed's, if it perſevere for ſom daies, death is to bee feared, unleſs either a fever which may conſume the matter of the urine, or a ſcouring or flux, which may divert it, ſhall happen thereupon. For thus by ſtay it acquireth an acrid and venenate qualitie, which flowing by the veins readily infecteth the maſs of blood, and carried to the brain, much moleſt's it by reaſon of that ſimilitude and ſympathie of condition which the bladder hath with the *Meninges*. But nature, if prevalent, eaſily free'th it ſelf from this danger by a manifeſt evacuation by ſtool, otherwiſe it muſt neceſſarily call as it were to its aid, a feveriſh heat, which may ſend the abounding matter of this ſerous humiditie out through the skin, either by a ſenſible evacuation as by ſweat; becauſ ſweat and urine have one common matter: or elſ diſperſ and breath it out by tranſpiration, which is an inſenſible excretion.

A fever following thereon help's the ſuppreſſion of urine.

## CHAP. LI.

### *Of bloodie Urine.*

The differences.

Cauſes.

SOm piſs pure blood, others mix't, and that either with urine, and then that which is expelled reſemble's the waſhing of fleſh newly killed; or elſ with *pus*, or matter, and that either alone or mixed with the urine: There may bee diverſ cauſes of this ſymptom, as the too great quantitie of blood gathered in the bodie, which by the ſuppreſſion of the accuſtomed and periodical evacuation, by the courſes or hemorrhoids, now turn's its courſ to the reins and bladder: the fretting aſunder of ſom veſſel by an acrid humor, or the breaking thereof by carrying or lifting of ſom heavie burden, by leaping, falling from high, a great blow, the falling of ſom weight upon the loins, rideing Poſt too violently, the too immoderate uſe of venerie, and laſtly, from anie kinde of painful and more violent exerciſe, by a rough and ſharp ſtone in the kidnies, by the weakneſs of the retentive facultie of the kidnies, by a wound of ſom of the parts belonging to the urine, by the too frequent uſe of diuretick and hot meats and medicines, or elſ of things in their whole nature contrarie to the urinarie parts; for by theſe and the like cauſes, the reins are oft-times ſo inflamed, that they neceſſarily impoſtumate, and at length the impoſtume beeing broken it turn's iuto an ulcer, caſting forth quitture by the urine.

Signs of what cauſes they proceed.

In ſo great varietie of the cauſes of bloodie urine, wee may gather whence the cauſes of this ſymptom may ariſe, by the depraved action of this, or that part, by the condition of the flowing blood, to wit, pure or mix't, and that either with the urine alone, or with *pus*. For example, if this bloodie matter flow from the lungs, liver, kidnies, diſlocated *Vertebræ*, the ſtraight gut, or other the like part: you may diſcern it by the ſeat of the pain and ſymptoms, as a fever: and the proprietie of the pain, and other things which have preceded, or are yet preſent. And wee may gather the ſame by the plentie and qualitie, for if, for example, the *pus* flow from an ulcer of the arm, the purulent matter will flow by turns, one while by the urine, ſo that little is caſt forth by the ulcer; then preſently on the contrarie the urine becom's more cleer. That purulent matter which flow's from the lungs by reaſon of an *Empiema*, or from the liver, or any other bowel placed above the midriff, the *pus* which is caſt forth with the urine, is both in greater plentie and more exactly mixed with the urine, then that which flow's from the kidnies and bladder. It neither belong's to our purpoſe, or a Surgeon's office, either to undertake, or deliver the cure of this affect. It ſhall ſuffice onely to note that the cure of this ſymptom is not to bee hoped for ſo long as the cauſ remain's. And if this blood flow by the opening of a veſſel, it ſhall bee ſtaied by aſtringent medicines; if broken, by agglutinative; if corroded or fretted aſunder, by ſarcotick.

Cure.

## CHAP. LII.

### *Of the ſigns of the ulcerated kidnies.*

I Had not determined to follow or particularly handle the cauſes of bloodie urines, yet becauſ that which is occaſioned by the ulcerated reins or bladder more frequently happen's, therefore I have thought good briefly to ſpeak thereof in this place. The ſigns of an ulcer of the reins are, pain in the loins, matter howſoever mix't with the urine, never evacuated by it ſelf, but alwaies flowing forth with the urine, and reſideing in the bottom of the chamber-pot, with a ſanious and red ſediment, fleſhie and as it were bloodie fibres ſwimming up and down in the urine, the ſmell of the filth is not ſo great as that which which flow's from the ulcerated bladder, for that the kidnies, ſeeing thsy are of a fleſhie ſubſtance, do far better ripen and digeſt the purulent matter then the bladder which is nervous and bloodleſs.

Why the matter which flow's from the kidnies is leſs ſtinking then that which flow's from the bladder.

CHAP.

## CHAP. LIII.

*Of the signs of the ulcerated Bladder.*

ULcers are in the bottom of the bladder, and the neck thereof. The signs of an ulcer in the bladder are, a deep pain at the share-bones; the great stench of the matter flowing there-from, white and thin skins swimming up and down in the water. But when the ulcer possesseth the neck of the bladder, the pain is more gentle, neither doth it trouble before the patient com to make water, but in the verie making thereof, and a little while after. Differences.

But it is common both to the one and the other, that the yard is extended in makeing of water, to wit, by reason of the pain caused by the urine fretting of the ulcerated part in the passage by: neither is the matter seen mixed with the urine, as is usual in an ulcer of the upper parts, becaus it is poured forth not together with the urine, but after it.

## CHAP. LIV.

*Prognosticks of the ulcerated Reins and Bladder.*

ULcers of the kidnies are more easily and readily healed then those of the bladder; for fleshie parts more speedily heal and knit, then bloodless and nervous parts. Ulcers which are in the bottom of the bladder, are uncureable, or certainly most difficult to heal; for besides that they are in a bloodless part, they are daily vellicated and exasperated by the continual afflux of the contained urine; for all the urine is never evacuated: now that which remaines after makeing water, becom's more acrid by the distemper and heat of the part, for that the bladder is alwaies gathered about it, and dilated and straightned according to the quantitie of the contained urine: therefore in the *Ischuria*, that is, the suppression or difficultie of makeing water, you may sometimes see a quart of water made at once. Those which have their legs fall away, haveing an ulcer in their bladder, are near their deaths. Ulcers arising in these parts, unless they bee consolidated in a short time, remain uncureable. Why ulcers of the bladder are cured with more difficultie.

## CHAP. LV.

*What cure must bee used in the suppression of the Urine.*

IN cureing the suppression of the urine, the indication must bee taken from the nature of the disease, and cause thereof, if it bee yet present or not. But the diversitie of the parts, by which beeing hurt, the *Ischuria* happen's, intimate's the varietie of medicines, neither must wee presently run to diureticks, and things breaking the stone, which manie Empericks do. For hence grievous and malign symptoms often arise, especially if this suppression proceed from an acrid humor, or blood pressed out by a bruise, immoderate venerie, and all more vehement exercise, a hot and acrid potion, as of *Cantharides*, by too long abstaining from makeing water, by a *Phlegmon*, or ulcer of the urinarie parts. For thus the pain and inflammation are increased, whence follow's a gangrene, and at length death. Wherefore attempt nothing in this case without the advice of a Physician, no not when you must com to Surgerie. For diureticks can scarce have place in another case, then when the urinarie passages are obstructed by gravel, or a gross and viscid humor, or else in som cold countrie, or in the application of Narcoticks to the loins; although wee must not heer use these before wee have first made use of general medicines: now diureticks may bee administred sundrie waies, as heerafter shall appear. Scopes of cureing. To what suppression of the urine diureticks must not bee used. To which, and when to bee used.

℞. *agrimon. urtic. parietar. furculos rubros habentis, an.* m.i. *rad. asparag. mundat.* ℥iiii. *gran. alkekengi, nu.* xx. *sem. malvæ* ℥ß. *rad. acor.* ℥i. *bulliant omnia simul in sex libris aquæ dulcis ad tertias, deinde coletur.* Let the patient take ℥iiii. hereof with ℥i. of sugar candie, and drink it warm fasting in a morning, three hours before meat. Thirtie or fortie Ivie-berries beaten in white wine, and given the patient to drink som two hours before meat, are good for the same purpose. Also ℥i. of nettle-seeds made into fine powder, and drunk in chicken-broth, is good for the same purpose. A decoction also of grummel, Goat's-saxifrage, pellitorie of the wall, white saxifrage, the roots of parslie, *asparagus, acorus, bruscus*, and orris drunk in the quantitie of som three or four ounces, is profitable also for the same purpose. Yet this following water is commended above the rest to provoke urine, and open the passages thereof, from what cause soever the stopping thereof proceed. ℞. *radic. osmund. regal. cyp. bis-mal. gram. petrosel. fœnic. an.* ℥ii. *raph. crassior. in taleol.* ℥iiii. *macerentur per noctem in aceto albo acerrimo, bulliant postea in aquæ fluvialis* ℔x. *saxifrag. crist. marin. rub. tinct. milii solis, summitat. malvæ, bismal.* A diuretick water.

*biſmal.an.* p.ii. *berul.cicer. rub.an.* p.i. *ſem. melon. citrul.an.* ℥ii.ß. *alkekengi, gra.xx. glycyrhiz.* ℥.i. *bulliant omnia ſimul ad tertias: in colaturâ infunde per noctem fol. ſen.oriental.* ℔.ß. *fiat iterum parva ebullitio, in expreſſione colatâ infunde cinam. electi.* ℥vi. *colentur; iterum colatura injiciatur in alembicum vitreum, poſtea tereb.venet.lucid.* ℔.ii. *aq.vitæ* ℥vi. *agitentur omnia ſimul diligentiſſimè. Lutetur alembicum luto ſapientiæ, fiat diſtillatio lento igne in balneo mariæ.* Uſe it after the following manner: ℞. *aq. ſtillatitiæ preſciptæ* ℥ii. *aut* iii. According to the operation which it ſhall perform, let the patient take it four hours before meat. Alſo radiſh-water diſtilled in *balneo mariæ* is given in the quantitie of ℥iiii. with ſugar, and that with good ſucceſs. Baths and *ſemicupia*, or half baths are artificially made, relax, ſoften, dilate, and open all the bodie; therefore the preſcribed diureticks mixed with half a dram of treacle may bee fitly given at the going forth of the bath. Theſe medicines following are judged fit to cleanſ the ulcers of the kidnies and bladder. Syrup of maiden-hair, of roſes, taken in the quantitie of ℥i. with *hydromel*, or barlie-water: Aſſe's or Goat's-milk are alſo much commended in this affect, becauſ they cleanſ the ulcers by their ſerous or whayiſh portion, and agglutinate by their cheeſ-like. They muſt bee taken warm from the dug, with honie of roſes, or a little ſalt, leaſt they corrupt in the ſtomach; and that to the quantitie of four ounces, drinking or eating nothing preſently upon it. The following Trochiſces are alſo good for the ſame purpoſe. ℞. *quatuor ſem.frigid.major.ſeminis papaveris albi, portulas, plantag.cydon,myrtil, gum. tragacanth. & arub.pinear. glycyrrhi.mund.hordei mund.macag.pſilii, amygdal.dulcium, an.* ℥.i. *boli armen. ſanguin.dracon.ſpodii, roſar. maſtich.terræ, ſigil.myrrhæ, an.* ℥ii. *cum oxymelite, conficiantur ſecundùm artem trochiſci.* Let the patient take ℥ß. diſſolved in whay, ptiſan, barlie-water, and the like; they may alſo bee profitably diſſolved in plantain-water, and injected into the bladder. Let the patient abſtain from wine, and inſtead thereof let him uſe barlie-water, or *hydromel*, or a ptiſan made of an ounce of raiſins of the Sun, ſtoned and boiled in five pintes of fair water, in an earthen pipkin well leaded, or in a glaſs, until one pinte bee conſumed, adding thereto of liquorice ſcraped and beaten ℥i. of the cold ſeeds likewiſe beaten two drams. Let it, after it hath boiled a little more, bee ſtrained through an hypocras bag, with a quartern of ſugar, and two drams of choice cinnamon added thereto, and ſo let it bee kept for uſual drink.

Why the uſe of diureticks is better after bathing.

To cleanſ the ulcers of the kidnies and bladder.

Trochiſces to heal the ulcers of the kidnies.

Drink inſtead of wine.

## CHAP. LVI.

### *Of the* Diabete, *or inabilitie to hold the Urine.*

What *Diabete* is.

THe *Diabete* is a diſeaſ, wherein preſently after one hath drunk, the urine is preſently made in great plentie, by the diſſolution of the retentive facultie of the reins, and the depravation of immoderation of the attractive facultie. The external cauſes are the unſeaſonable and immoderate uſe of hot and diuretick things, and all more violent and vehement exerciſes. The internal cauſes are the inflammation of the liver, lungs, ſpleen, but eſpecially of the kidnies and bladder. This affect muſt bee diligently diſtinguiſhed from the excretion of the morbifick cauſes by urine.

The cauſes.

Signs.

The loins in this diſeaſ are moleſted with a pricking and biteing pain, and there is a continual and unquenchable thirſt: and although this diſeaſ proceed from a hot diſtemper, yet the urine is not colored, red, troubled, or thick, but thin, and white or wateriſh, by reaſon the matter thereof make's verie ſmall ſtay in the ſtomach, liver, and hollow vein, beeing preſently drawn away by the heat of the kidnies or bladder. If the affect long endure, the patient for want of nouriſhment falleth away, whence certain death enſue's. For the cure of ſo great a diſeaſ, the matter muſt bee purged, which cauſe's or feed's the inflammation or *phlegmon*, and conſequently blood muſt bee let. Wee muſt abſtain from four cold ſeeds, for although they may profit by their firſt qualitie, yet will they hurt by their diuretick facultie. Refrigerateing and aſtringent nouriſhments muſt bee uſed, and ſuch as generate groſs humors; as rice, thick and aſtringent wine mixed with much water. Exceeding cold, yea narcotick things ſhall bee applied to the loins, for otherwiſe by reaſon of the thickneſs of the muſcles of thoſe parts, the force, unleſs of exceeding refrigerateing things, will not bee able to arrive at the reins; of this kinde are oil of white poppie, henbane, *opium*, purſlain, and lettuce-ſeed, mandrage, vineger, and the like: of which, cataplaſms, plaſters, and ointments, may bee made fit to corroborate the parts, and correct and heat.

Why the urines are wateriſh.

The cure.

Narcotick things to bee applied to the loins.

## CHAP. LVII.

### *Of the Strangurie.*

What the Strangurie is.

THe Strangurie is an affect haveing ſom affinitie with the *Diabete*, as that wherein the water is involuntarily made, but not together at once, but by drops, continually and with pain.

The cauſes.

The external cauſes of a ſtrangurie are, the too abundant drinking of cold water,

water, and all too long ſtay in a cold place. The internal cauſes are, the defluxion of cold humors into the urinarie parts; for hence they are reſolved by a certain palſie, and the *ſphinger* of the bladder is relaxed, ſo that hee cannot hold his water according to his deſire: inflammation alſo and all diſtemper cauſeth this affect, and whatſoever in ſom ſort obſtruct's the paſſage of the urine; as clotted blood, thick phlegm, gravel, and the like. And becauſ, according to *Galen*'s opinion, all ſorts of diſtemper may cauſ this diſeaſ, diverſ medicines ſhall bee appointed according to the difference of the diſtemper. Therefore againſt a cold diſtemper fomentations ſhall bee provided of a decoction of mallows, roſes, *origanum*, calamint, and the like, and ſo applied to the privities: then preſently after, let them bee anointed with oil of bays, and of *Caſtoreum*, and the like. Strong and pure wine ſhall bee preſcribed for his drink, and that not onely in this cauſ, but alſo when the ſtrangurie happen's by the occaſion of obſtruction, cauſſed by a groſs and cold humor, if ſo bee that the bodie bee not plethorick. But if inflammation, together with a *Plethora* or fulneſs, hath cauſſed this affect, wee may, according to *Galen*'s advice, heal it by blood-letting. But if obſtruction bee in fault, that ſhall bee taken away by diureticks either hot or cold, according to the condition of the matter obſtructing. Wee heer omit to ſpeak of the *Dyſuria*, or difficultie of makeing water, becauſ the remedies are in general the ſame with thoſe which are uſed in the *Iſchuria*, or ſuppreſſion of urine.

*Com. ad aphor. 15. ſect. 3.*

*Ad aphor. 48. ſect. 7.*

## CHAP. LVIII.

### *Of the Colick.*

WHenſoever the guts beeing obſtructed, or otherwiſe affected, the excrements are hindred from paſſing forth, and if the fault bee in the ſmall guts, the affect is termed *Volvulus*, *Ileos*, and *Miſerere mei*; but if it bee in the greater guts, it is called the Colick, from the part affected, which is the *Colon*, that is, the continuitie of the greater guts; but eſpecially that portion of the greater guts, which is properly and eſpecially named *Colon*, or the Colick-gut. Therefore *Avicen* rightly define's the Colick, A pain of the guts, wherein the excrements are difficultly evacuated by the fundament. *Paulus Ægineta* reduceth all the cauſes of the Colick, how various ſoever, to four heads: to wit, to the groſneſs, or toughneſs of the humors impact in the coats of the guts: flatulencies hindred from paſſage forth: the inflammation of the guts: and laſtly, the collection of acrid and biteing humors. Now wee will treat of each of theſe in particular. Almoſt the ſame cauſes produce the groſneſs of humors, and flatulencies in the guts, to wit, the uſe of flatulent and phlegmatick, tough and viſcid meats, yea alſo of ſuch as are of good nouriſhment, if ſundrie thereof, and of ſundrie kindes bee eaten at the ſame meal, and in greater quantitie then is fit. For hence cruditie and obſtruction, and at length the collection of flatulencies, whereon a tenſive pain enſue's. This kinde of Colick is alſo cauſed by the uſe of crude fruits, and too cold drink, drunken eſpecially when anie is too hot by exerciſe, or anie other way: for thus the ſtomach and the guts continued thereto, are refrigerated, and the humors and excrements therein contained are congealed, and, as it were, bound up. The Colick which is cauſed by the inflammation of the kidnies, happen's by the ſympathie of the reins pained or troubled with the ſtone or gravel contained in them or the ureters. Therefore then alſo pain trouble's the patient at his hips and loins, becauſ the nervs, which ariſing from the *vertebræ* of the loins, are oppreſſed by the weight of the ſtones and gravel, about the joint of the hip are diſſeminated into the muſcles of the loins and thigh. Alſo the ureters are pained (for they ſeem nothing elſ but certain hollow nervs) and alſo the cremaſter muſcles, ſo that the patient's teſticles may ſeem to bee drawn upwards with much violence. Hence great, phlegmatick, and cholerick vomiting, and ſweat of the whole bodie, all which do not ſurceaſ before that the ſtone, or gravel ſhall bee forced down into the bladder. Now vomiting happen's in this affect, for that the ventricle, by reaſon of its continuitie and neighborhood which it hath with the guts, ſuffer's by conſent or ſympathie. For the ſtomach is of the ſame kinde or matter as the guts are, ſo that the guts ſeem nothing elſ but a certain production of the ſtomach. Therefore if at anie time nature endeavor to expel anie thing that is troubleſom in the kidnies, ureters, coats of the guts, meſenterie, *pancreas*, and hypochondries, it cauſeth a Colick with pain and vomiting. An hot and drie diſtemper alſo cauſeth the Colick, produceing a pricking and biteing pain, by drying the excrements ſhut up in the guts, as alſo by waſting as it were the radical humors of that place provided for the lubricateing of the guts. Acrid, viſcid, and tough phlegm cauſeth the ſame. There is alſo another cauſ of the Colick which is not ſo common, to wit, the twineing of the guts, that is, when they are ſo twined, folded, and doubled, that the excrements, as it were, bound in their knots, cannot bee expelled, as it manifeſtly happen's in the rupture called *Enterocele*, by the falling of the guts into the cod. Likewiſe alſo worms generated in the Colick-gut, whil'ſt that they mutually fold or twine

What *Ileos*, or *iliaca paſſio* is.

What *Colica paſſio*, or the Colick is.

*Lib. 3.*

*Lib. 3. c. 43.*

The manner of the ſtone-colick.

How a hot diſtemper cauſeth the colick.

The folding of the guts the cauſ of the colick.

themſelvs up, do alſo twine the *Colon* it ſelf, and fold it with them. Alſo the too long ſtay of the excrements in the guts, whether it ſhall happen by the peculiar default of the too hot and drie bodie of the patient, or by his diet, that is, the uſe of too drie meats, or exerciſes and pains taken in the heat of the ſun, or by the greatneſs of buſineſs, the minde beeing carried away, cauſeth the colick, with head-ach, and plentie of vapors flying upwards.

An hiſtorie. I remember I once diſſected the bodie of a boy of ſom twelv years old, who had his guts folded with manie as it were ties or knots of the reſtrained, too hard and drie excrements, the which hee caſt out by his mouth a little before his death, which brought him to his end, beeing not helped in time by fitting medicines. Now theſe are the cauſes of the colick, according to the opinion of the ancient and modern Phyſicians, of whoſe ſigns I judg it not amiſs heer to treat in particular. You ſhall know the patient is troubled with the ſtone-colick by the pain which is fixed, and as it were kept in one place, to wit, of the kidnies; by his former manner of life, as if the patient hath formerly voided ſtones or gravel together with his urine; by the pain of the hips and teſticles for the formerly mentioned cauſes, and laſtly, by that the patient caſt's forth by ſtone or urine, for that the great and laborious endevor of nature to caſt forth the ſtone which is in the kidnies, is propagated by a certain ſympathie, and like ſtudie of the neighboring parts, ſtirring up the expulſive faculties each to his work. The ſigns of a flatulent colick are, a tenſive pain, ſuch as if the guts were rent or torn in pieces, together with a noiſe or rumbling in the bellie. The force of the ſhut-up winde is ſomtimes ſo great, that it rendeth or teareth the guts in ſunder, no otherwiſe then a ſwine's bladder too hard blown up. Which when it happen's, the patient die's with much vomiting, becauſ the ſtomack oppreſt with winde, can contain nor imbrace no meat. The colick whith is occaſioned by the too long keeping in of the excrements, is accompanied with the weight and pain of the bellie, the tenſion of the guts, head-ach, apparent hardneſs of the bellie, and the complaint of the patient that hee hath not gon to ſtool in a long time. That which proceed's from a cholerick inflammation, yeeld's a ſenſ of great heat and pulſation in the midſt of the bellie, by reaſon of the veins and arteries which are in the *pancreas* and coats of the guts, and there are the other ſigns of a *Phlegmon*, although alſo this as it were inflammation may ariſe alſo from ſalt, acrid and viſcous phlegm, which nature can neither expel upwards by vomit, nor downwards by ſtool; this ſundrie times is aſſociated with a difficultie of makeing water, for that when as the right gut is inflamed, the bladder is preſſed by reaſon of their ſocietie or neighborhood. The collick which proceed's from the contorſion of the guts, ſhew's it ſelf by the exceſſive crueltie of the pain ariſing, for that the guts are not in their due ſite and place, and becauſ the excrements by their too long detenſion acquire a preternatural heat; and this is the cauſ of the death of manie ſuch as have ruptures, for that the gut falling down from the natural place into the cod, beeing a preternatural place, is redoubled, and kept there as it were bound, whereby the excrements beeing baked, becoming more acridly hot, cauſ inflammation, and by raiſing up flatulencies, increaſ the diſtenſion through all the guts, until at length a deadly *Ileos* or colick ariſing, they com forth at the mouth. For prognoſticks; it is better to have the pain in the colick to wander up and down, then to bee fixed: it is good alſo that the excrements are not wholly ſuppreſt. But the evil ſigns that are heer pronounce the affect either difficult or deadly. Now theſe ſhew that it is deadlie, intolerable tormenting pain, continual vomiting, cold ſweat, coldneſs of the extreme parts, hicketing by reaſon of the ſympathie the ſtomack hath with the guts, a phrenſie by the conſent of the brain with the ſtomach, and oft-times a convulſion, by drawing the matter into the nervs. But ſuch as have gripeing and pain about their navil and loins, which can neither bee helped by medicine nor otherwiſe, it end's in a dropſie. The cure muſt bee diverſified according to the varietie of the cauſes, for the ſtone-collick is cured by medicines proper to the ſtone; that which is cauſed by an *Enterocele*, is cured by the onely reſtoreing the gut to its place; that which is occaſioned by worms, require's medicines fit to kill and caſt forth the worms. But that which proceed's from the weakneſs and refrigeration of the guts and ſtomack, is cured by heating and ſtrengthening medicines as well applied outwardly, as taken in inwardly by the mouth, or otherwaies. The beginning of the cure of that which is occaſioned by tough phlegm and flatulencies, is by the mitigation of the pain, ſeeing there is nothing which more deject's the powers then pain. To this purpoſe ſhall you provide baths, *Semicupia*, fomentations of mallows, marſh-mallows, violet leavs, penie-royal, fennel, *Origanum*, the ſeeds of time and fenugreek, flowers of camomil, melilote, and other ſuch like, which have power to heat, drie, attenuate, and rarifie the skin, ſo to diſſipate the winde. But all ſuch muſt bee actually hot. Alſo the bellie may bee anointed with this following ointment. ℞. *olei chamæm. aneth. butyr. recent. an.* ℥i. *ſem. apii, petroſ. & galang. an.* ʒß. *aq. vitæ, ol. ſalviæ aut thymi chimicè extract. q. ſ.* The following liniment is much commended by *Hollerius*. ℞. *olei rut. & nardi, an.* ℥vi. *galbani cum aq. vit. diſſoluti* ℥ii. *liquefactis ſimul adde zibetæ gr.* iiii. *croci, gr.* vi. *fiat linimentum.* Alſo little bags made with millet, oats and ſalt fried with a little white wine in a frying-pan, ſhall bee applied hot upon the bellie and flanks, and renewed before they grow cold. You may, in ſtead of theſe bags, uſe ox-bladders half filled with a decoction of reſolving things;

Signs whereby wee know that the colick proceed's from this or that cauſ.

*Avicen. li. 3. Hip. aphor. 10. ſect. 4.*

The cure.

Baths and anodine fomentations.

An ointment.

things; as salt, rosemarie, time, lavander, bay-berries, and the like: then inject a glyster beeing thus made. ℞.*quatuor remol. an.*m.i. *orig. puleg. calamenth. an.*m.ß. *anisi, carui an.*m.ß. *flor. aneth. an.*p.i. *bulliant in hydromele ad* ℔.i. *in quâ dissolve bened. laxat. mellis anthosati, sacc rub. an.*℥i. *olei aneth. & chamæm. an.*℥iß. Let a glyster bee made to bee injected at twice; for the guts being stretched out cannot contain the accustomed *dosis* of a glyster: Also this following glyster is much approoved. ℞. *vini malvat. & olei nucum, an.*℥iii. *aqua vitæ,* ℥i. *olei juniperi, & rut. per quintam essent extract. an.*℥iii. Let this bee injected as hot as the patient can endure. I have oft-times as by miracle helped intolerable pain caused by the winde-collick and phlegm with this glyster. *Avicen* prescribe's a carminative glyster made of hyssop, *origanum, acorus,* anis-seeds, and English galengal. Let the patient feed upon meats of good juice and easie digestion, as broths made with the yolks of eggs, saffron, hot herbs and a nutmeg; let him drink good wine, as Muskadine, or hypocras made with good wine so to heat the stomach and guts. For in *Galen*'s opinion, all windines is generated by a remiss heat. But if the pain shall continue, a large cupping-glass shall bee applied to the navel, to draw and dissipate the windines; the bellie shall bee bound with strong and broad ligatures, to strengthen the guts, and discuss the matter of flatulencies. The patients taught by nature, use this remedie, whil'st none admonishing them, they press the bellie with their hands in the bitternes of pain. But if the pain cannot bee thus appeased, wee must com to such medicines as work by an occult propertie, as the dried gut of a Wolf, for a dram thereof made into powder it given in wine with good succes. That colick which is caused by a cholerick inflammation require's contrarie medicines, to wit, blood-letting, and a refrigerateing diet; potions made of *Diacatholicon* and *Cassia* dissolved in barlie-water, also cooling glysters. *Avicen* prescribe's narcoticks, for that beeing cold, they are contrarie to the morbifick cause which is hot and drie; such are pills of *Philonium.* Also pills of *Hyera picra* in the quantitie of ℈iv. with *opium* and saffron, of each one grain, may bee used. Also baths are appointed, made of water wherein mallows, marsh-mallows, violet-leavs, flowers of white lilies, lettuce, purslain have been boiled, to correct the acrimonie of the cholerick and hot humors, whence the disease and symptom ariseth. That colick which is like to this, and proceed's from salt, acrid, thick and tough phlegm, is cured, the humor beeing first attenuated and diffused, and at length evacuated by medicines taken by the mouth and otherwise, according to the prescription of the learned Physician. But *Avicen* cure's that which is occasioned by the suppression of the hardened excrements, and twineing of them by meats which have an emollient facultie, such as humecting broths, as that which is made of an old cock tired with running, and threshed to death, and so boiled with dill, polypodie, and a little salt, until the flesh fall from the bones; also hee useth detergent glysters, such as this which follow's. ℞.*betæ,* m.i. *furfuris,* p.i. *ficus,* nu.x. *alth.*m.i. *fiat decoctio ad* ℔.i. *in quâ dissolve nitri & muriæ an.*℥ii. *sacc.* ℥i. *ol. sesamini,* ℥ii. But if the obstruction bee more contumacious, you must use more powerful ones made *ex cyclamin. centaurio, & hiera diacolocinth. ad* ℥ii. But if the obstruction do notwithstanding remain, so that the excrements com forth at the mouth, *Marianus Sanctus* wisheth (by the counsel of manie who have so free'd themselvs from this deadlie symptom) to drink three pounds of quick-silver with water onely. For the doubled, and as it twined up-gut is unfolded by the weight of the quick-silver, and the excrements are depresst and thrust forth, and the worms are killed which gave occasion to this affect. *John* of S. *Germans,* that most worthie Apothecarie, hath told mee that hee saw a Gentleman, who when as hee could not bee free'd from the pain of the colick by anie means prescribed by learned Physicians, at length by the counsel of a certain German his friend, drank three ounces of oil of sweet almonds drawn without fire, and mixed with som white wine and pellitorie-water, and swallowed a leaden bullet besmeared with quick-silver, and that bullet coming presently out by his fundament, hee was wholly free'd from his colick.

Why glysters in the collick must bee given in les quantitie.

Specifick medicines.

The cure of a cholerick collick.

The force of quick-silver in the unfolding of the guts.

An historie.

## CHAP. LIX.

### *Of Phlebotomie, or Blood-letting.*

PHlebotomie is the opening of a vein, evacuating the blood with the rest of the humors; thus Arteritomie, is the opening of an arterie. The first scope of phlebotomie is the evacuation of the blood offending in quantitie, although oft-times the Physician's intention is to draw forth the blood which offend's in qualitie, or either way by opening a vein. Repletion, which is caused by the quantitie, is two-fold; the one *ad vires,* that is, to the strength, the veins beeing otherwise not verie much swelled; this make's men infirm and weak, nature not able to bear his humor, of what kinde soever it bee. The other is termed *ad vasa,* that is, to the vessels, the which is so called comparatively to the plentie of blood, although the strength may verie well away therewith. The vessels are oft-times broke by this kinde of repletion, so that the patient cast's and spit's up blood, or else evacuate's it by the nose, womb, hemorrhoids, or *varices.* The repletion which is *ad vires,* is known by the heavines and weari-

What Phlebotomie is.

The use.

Repletion two-fold.

The signs.

ſomneſs of the whole bodie; but that which is *ad vaſa*, is perceived by their diſtenſion and fulneſs, both of them ſtand in need of evacuation. But blood is onely to bee let by opening a vein, for five reſpects: the firſt is to leſſen the abundance of blood, as in phletorick bodies, and thoſe who are troubled with inflammation without anie plenitude. The ſecond is for diverſion, or revulſion, as when a vein of the right is opened to ſtay the bleeding of the left noſtril. The third is, to allure or draw down: as when the *ſaphena* is opened in the ankle, to draw down the courſes in women. The fourth is for alteration or introduction of another qualitie; as when in ſharp fevers wee open a vein to breath out that blood which is heated in the veſſels, and cooling the reſidue which remain's behinde. The fifth, is to prevent imminent diſeaſes; as when in the Spring and Autumn wee draw blood by opening a vein in ſuch as are ſubject to ſpitting of blood, the ſquinancie, pluriſie, fallingſickneſs, apoplexie, madneſs, gout, or in ſuch as are wounded, for to prevent the inflammation which is to bee feared. Before blood-letting, if there bee anie old excrements in the guts, they ſhall bee evacuated by a gentle glyſter, or ſuppoſitorie, leaſt the meſaraick veins ſhould thence draw unto them anie impuritie. Bloud muſt not bee drawn from ancient people, unleſs ſom preſent neceſſitie require it, leaſt the native heat, which is but languid in them, ſhould bee brought to extreme debilitie, and their ſubſtance decay; neither muſt anie in like ſort bee taken from children, for fear of reſolving their powers by reaſon of the tenderneſs of their ſubſtance, and rareneſs of their habit. The quantitie of blood which is to bee let, muſt bee conſidered by the ſtrength of the patient, and greatneſs of the diſeaſ: therefore if the patient bee weak, and the diſeaſ require large evacuation, it will bee convenient to part the letting of blood, yea by the interpoſition of ſom daies. The vein of the forehead beeing opened is good for the pain of the hind part of the head; yet firſt wee foment the part with warm water, that ſo the skin may bee ſofter, and the blood drawn into the veins in greater plentie. In the ſquinancie, the veins which are under the tongue muſt bee opened aſſant, without putting anie ligatures about the neck, for fear of ſtrangling. Phlebotomie is neceſſarie in all diſeaſes which ſtop or hinder the breathing, or take away the voice or ſpeech, as likewiſe in all contuſions by a heavie ſtroke, or fall from high, in an apoplexie, ſquinancie, and burning fever, though the ſtrength bee not great, nor the blood faultie in quantitie or qualitie, blood muſt not bee let in the height of a fever. Moſt judg it fit to draw blood from the veins moſt remote from the affected and inflamed part, for that thus the courſ of the humors may bee diverted, the next veins on the contrarie beeing opened, the humors may bee the more drawn into the affected part, and ſo increaſ the burden and pain. But this opinion of theirs is verie erroneous, for an opened vein alwaies evacuate's and burden's the next part. For I have ſundrie times opened the veins and arteries of the affected part, as of the hands and feet in the Gout of theſe parts; of the temples in the Megrim; whereupon the pain alwaies was ſomwhat aſſwaged, for that together with the evacuated blood, the malignitie of the Gout, and the hot ſpirits (the cauſers of the Head-ach or Megrim) were evacuated. For thus *Galen* wiſheth to open the arteries of the temples in a great and contumacious defluxion falling upon the eies, or in the Megrim, or Head-ach.

Five ſcop's in letting blood.

From whence wee muſt not draw blood.

When and for what it is neceſſarie.

13. *meth. cap. ult.*

## CHAP. LX.

*How to open a vein, or draw blood from thence.*

THe firſt thing is, to ſeat or place the patient in as good a poſture as you can, to wit, in his bed, if hee bee weak; but in a chair, if ſtrong; yet ſo, that the light may fall directly upon the vein which you intend to open. Then the Surgeon ſhall rub the arm with his hand, or a warm linnen cloth, that the blood may flow the more plentifully into the vein. Then hee ſhall binde the vein with a ligature a little above the place appointed to bee opened, and hee ſhall draw back the blood upwards towards the ligature from the lower part; and if it bee the right arm, hee ſhall take hold thereof with his left hand; but if the left, then with his right hand, preſſing the vein in the mean time with his thumb a little below the place where you mean to open it, leaſt it ſhould ſlip away; and that it may bee the more ſwoln by forcing up the blood. Then with his nail hee ſhall mark or deſign the place to bee opened, and ſhall anoint it, beeing ſo marked, with butter or oil, whereby the skin may bee relaxed, and the lancet enter more eaſily, and therefore the ſection may bee the leſs painful. Hee ſhall hold his lancet between his thumb and fore-finger, neither too near, nor too far from the point; hee ſhall reſt his other three fingers upon the patient's arm, that ſo his hand may bee the more ſteddie, and leſs trembling. Then ſhall hee open the vein with an inciſion agreeable to the magnitude of the veſſel, and the indifferent thickneſs of the contained blood, ſomwhat aſſant, diligently avoiding the arterie which lie's under the *Baſilica*, and the nerv, or tendon of the two-headed muſcle, which lie's under the Median vein. But for the Cephalick, it may bee opened without danger. As much blood as is ſufficient beeing drawn, according to the minde of the Phyſician, hee ſhall looſ the ligature, and laying a little bolſter under

How to place the patient.

Rubbing the arm.

Bindeing it before wee open the vein.

Why the *Baſilica* and Median may not bee opened ſo ſafely as the Cephalick.

under, hee shall with a ligature binde up the wounded part to stay the bleeding, the ligature shall bee neither too straight, nor loose, but so that the patient may freely bend and extend his arm; wherefore whil'st that is in doing, hee must not hold his arm straight out, but gently bended, otherwise hee cannot freely bend it. The bindeing up after blood-letting.

*The figure of a Lancet to let blood withall.*

## CHAP. LXI.

### *Of Cupping-glasses, or Ventoses.*

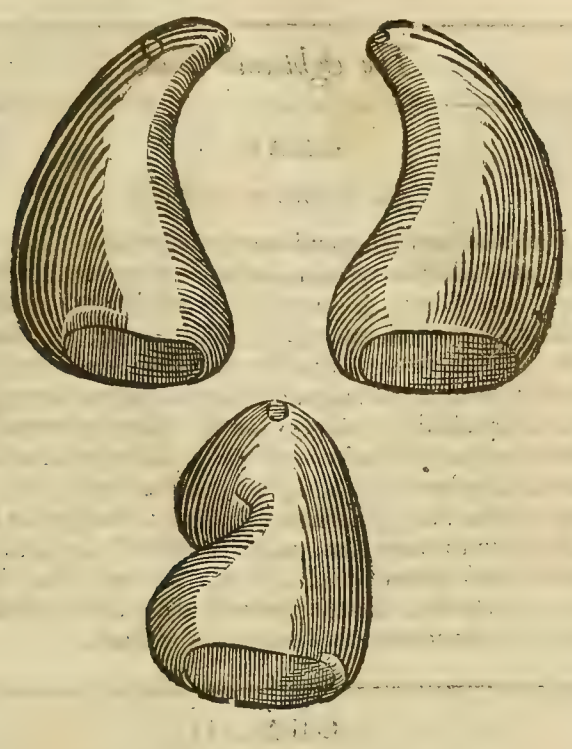
Cupping-glasses are applied especially when the matter conjunct and impact in anie part is to bee evacuated, and then chiefly there is place for scarification after the Cupping-glasses: yet they are also applied for revulsion and diversion; for when an humor continually flow's down into the eies, they may bee applied to the shoulders with a great flame, for so they draw more strongly and effectually. They are also applied under women's breasts, for to stop the courses flowing too immoderately, but to their thighs, for to provoke them. They are also applied to such as are bit by venemous beasts, as also to parts possessed by a pestiferous *Bubo* or Carbuncle, so to draw the poison from within outwards. For (as *Celsus* saith) a Cupping-glass where it is fastned on, if the skin bee first scarified, draw's forth blood; but if it bee whole, then it draw's spirit. Also they are applied to the bellie, when anie gross or thick windines shut up in the guts, or membranes of the muscles of the *Epigastrium*, or lower bellie causing the colick, is to bee discussed. Also they are fastned to the *Hypocondrie's*, when as flatulencie in the liver, or spleen, swell's up the entrail lying there-under, or in too great a bleeding at the nose. Also they are set against the reins in the bottom of the bellie, whereas the ureters run down to draw down the stone into the bladder, when as it stop's in the middle or entrance of the ureter. You shall make choice of greater and lesser Cupping-glasses, according to the condition of the part, and the contained matter. But to those parts whereto these cannot by reason of their greatnes bee applied, you may fit horns for the same purpose. The use of Cupping-glasses. *Lib.8.cap.1.*

The

*The figures of Cupping-glasses of different bigness, with little holes in their bottoms, which shall bee stopped with wax, when you apply them to the part; but opened when you would take them off, that so the air may enter in with the more ease.*

*A Lancet.*

*Horns which without fire, by onely ſucking at the upper hole, draw from the part lying under them.*



## CHAP. LXII.

*Of Leeches, and their uſe.*

The uſe of Leeches.

IN thoſe parts of the bodie whereto Cupping-glaſſes and horns cannot bee applied, to thoſe Leeches may for the moſt part bee put, as to the fundament, to open the coat of the hemorrhoid veins, to the mouth of the womb, the gums, lips, noſe, fingers. After the Leech, beeing filled with blood, ſhall fall off, if the diſeaſ require a large evacuation of blood, and the part affected may endure it, Cupping-glaſſes, or Horns, or other Leeches ſhall bee ſubſtituted. If the Leeches bee handled with the bare hand, they are angred, and becom ſo ſtomachful, as that they will not bite; wherefore you ſhall hold them in a white and clean linnen cloth, and applie them to the skin, beeing firſt lightly ſcariſied, or beſmeared with the blood of ſom other creature; for thus they will take hold of the fleſh, together with the skin more greedily and fully. To cauſ them fall off, you ſhall put ſom powder of aloës, ſalt or aſhes upon their heads. If anie deſire to know how much blood they have drawn, let him ſprinkle them with ſalt made into powder, as ſoon as they are com off; for thus they will vomit up what blood ſoever they have ſucked. If you deſire they ſhould ſuck more blood then they are able to contain, cut off their tails as they ſuck, for thus they will make no end of ſucking, for that it run's out as they ſuck it. The Leeches, by ſucking, draw the blood not onely from the affected part whereto they are applied, but alſo from the adjacent and diſtant parts. Alſo ſomtimes the part bleed's a good while after the Leeches bee fallen away, which happen's not by ſcarification after the application of Cupping-glaſſes or Horns. If you cannot ſtop the bleeding after the falling away of the Leeches, then preſs the half of a bean upon the wound, until it ſtick of it ſelf, for thus it will ſtay; alſo a burnt rag may bee fitly applied with a bolſter and fit ligature.

How to applie them.

How to cauſ them to fall off.

*The end of the ſeventeenth Book.*

# Of the GOUT.

## *The eighteenth Book.*

### CHAP. I.

*The deſcription of the Gout.*

What it is.

THe Gout is a diſeaſ occupying and harming the ſubſtance of the Joints by the falling down and collection of a virulent matter accompanied by four humors. This word *Arthritis* or Gout, is general for everie joint ſo affected; yet it enjoie's diverſ particular names in ſundrie joints of the bodie: as that which falleth upon the joint of the Jaw, is termed *Siagonagra*, for that the Greeks call the Jaw *Siagon*; that which affect's the neck is termed *Trachelagra*, for that the neck is termed *Trachelos*: that which trouble's the back-bone is called *Rhaciſagra*, for the ſpine is termed *Rhacis*: that which moleſt's the ſhoulders *Omagra*, for the joint of the ſhoulder is called *Omos*: that which affect's the joint of the Collar-bones *Cleiſagra*, for that the Greeks call this bone *Cleis*: that in the Elbow, *Pechyagra*, for *Pechys* ſignifieth the elbow: the gout in the hand is called *Chiragra*, in the Hip *Iſchias*, in the knee *Gonagra*, in the feet *Podagra*, for that the Hand, Hip, Knee, and Foot are in Greek termed, *Cheir*, *Iſchion*, *Gony*, and *Pous*. When as there is great abundance of humors in a bodie, and the patient lead's a ſedentarie life, not ſom one, but all the joints of the bodie are at once troubled with the Gout.

Particular Gouts.

### CHAP. II.

*Of the occult cauſes of the Gout.*

THe humor cauſing the Gout is not of a more known, or eaſily expreſt nature then that which cauſeth the plague, *Lues venerea*, or falling ſickneſs. For it is of a kinde and nature clean different from that which cauſ a *Phlegmon*, *œdema*, *eryſipelas*, or *Scirrhus*; for, as *Aëtius* ſaith, it never cometh to ſuppuration like other humors, not for that, as I think, becauſ it happen's in bloodleſs parts, but through the occaſion of ſom occult malignitie. Hereto may bee added that the humors which cauſ the fore-mentioned tumors, when as they fall down upon anie part, not then truly when they are turned into *pus* or matter, do they cauſ ſo ſharp pains as that which cauſeth the Gout, for the pain thereof is far more ſharp, then of that humor which cauſeth an ulcerated *Cancer*. Beſides theſe humors, when they fall upon the joints through anie other occaſion, never turn into knots, onely that which cauſeth the Gout in the joints, after it hath fallen thither, is at length hardned into a certain knottie and as it were plaſterlike ſubſtance to bee amended by no remedies. But ſeeing it offend's not the parts by which it flow's down, (no more then the matter which creeping upwards from the lower parts to the brain, cauſſeth the *Epilepſie*) as ſoon as it falleth into the ſpaces of the Joints it cauſſeth cruel pain, one while with heat, another while with cold. For you may ſee ſom troubled with the Gout, who complain that their pained joints are burn't; there are others to whom they ſeem colder then anie ice, ſo that they cannot bee ſufficiently heated to their heart's deſire; verily you may ſomtimes ſee in the ſame bodie troubled with the Gout, that the Joints of the right ſide will as it were burn with heat, but on the left ſide will bee ſtiff with cold; or which is more, the knee in the ſame ſide to bee tormented with a hot diſtemper, and the ancle troubled with a cold. Laſtly, there ſomtimes happen's a ſucceſſion of pain in a ſucceſſion of daies, as the ſame joints will bee this day troubled with a hot, to morrow with a cold diſtemper, ſo that wee need not marvel to ſee Phyſicians preſcribe one while hot, another while cold medicines againſt the ſame diſeaſ of the ſame part and bodie. Alſo it ſomtimes happen's that the malignitie of this humor doth not onely not yeeld to medicines, but it is rather made worſ, ſo that the patients affirm that they are far better when they have none, then when they have anie remedies applied. For all things beeing rightly don, and according to reaſon, yet the diſeaſ will com again at certain ſeaſons by fits; and hereupon it is ſaid by *Horace*:

*Lib. 1 2. cap. 12.*

The reſemblance of the Gout to the Epilepſie.

The ſtrange varietie of the Gout.

*Qui cupit, aut metuit, juvat illum ſic domus aut res,*
*Ut lippum pictæ tabulæ, fomenta podagram.*
Riches the covetous, and fearful ſo do pleaſ,
As pictures ſore eies, Bathes the Gout do eaſ.

Certain-

Certainly ſuch as have this diſeaſ hereditarily, can no more bee helped and throughly free'd therefrom, then thoſe in whom the matter of the diſeaſ is becom knottie, whereof *Ovid* thus ſpeaketh:

*Tollere nodoſam neſcit medicina podagram.*
Phyſick the knottie Gout it cannot heal.

Theſe reaſons have induced manie to believ that the eſſence of this diſeaſ is unknown, for there is a certain occult and inexplicable virulencie, the autor of ſo great malignitie and contumacie. Which *Avicen* ſeem's to acknowledg, when hee write's that there is a certain kinde of Gout whoſe matter is ſo acute and malign, that if it at anie time bee augmented by the force of anger, it may ſuffice to kill the partie by ſudden death. Therefore *Galen* himſelf write's that Treacle muſt bee uſed in all Arthritical and goutie affects, and as I think, for no other reaſon, then for that it drie's, waſt's and weaken's the malignitie thereof. *Gordonius* is of the ſame opinion, but addeth withall, that the bodie muſt bee prepared and purged before wee uſe Treacle. Therefore the matter of the Gout is a thin and virulent humor, yet not contagious, offending in qualitie rather then quantitie, cauſing extreme pains, and therefore inſtigateing the humors together with the caliginous and flatulent ſpirits prepared or readie for defluxion upon the affected parts. Therefore as the biteings of Aſps, and ſtinging of Waſps cauſ cruel pain with ſudden ſwelling and bliſtering, which is by the heat of the humors which the poiſon hath tainted, and not by the ſimple ſolution of continuitie, ſeeing that wee daily ſee Shoo-makers and Tailors pricking their fleſh with aules and needles without haveing anie ſuch ſymptom; So the virulencie of the gout cauſeth intolerable tormenting pain, not by the abundance, becauſ it happen's to manie who have the gout, no ſign of defluxion appearingin the joints, but onely by a malign and inexplicable qualitie, by reaſon whereof theſe pains do not ceaſ unleſs abated by the help of medicines, or nature, or both. The recital of the following hiſtories will give much light to that inexplicable and virulent malignitie of the matter cauſing the Gout. Whil'ſt King Charls the ninth of happie memorie, was at Burdeaux, there was brought to *Chappellain* and *Caſtellan* the King's Phyſicians, and *Taſte* a Phyſician of Burdeaux, *Nicolas Lambert* and my ſelf Surgeons, a certain Gentlewoman ſom fortie yeers old, exceedingly troubled for manie yeers by reaſon of a tumor ſcarce equalling the bigneſs of a peaſ, on the outſide of the joint of the left Hip: one of her tormenting fits took her in my preſence; ſhee preſently began to crie and roar, and raſhly and violently to throw her bodie this way and that way, with motions and geſtures above a woman's, yea a man's nature. For ſhee thruſt her head between her legs, laid her feet upon her ſhoulders, you would have ſaid ſhee had been poſſeſſed of the Divel. This fit held her ſom quarter of an hour; dureing all which time I heedfully obſerved whether the grieved part ſwelled anie bigger then it was acuſtomed, whether there hapned anie new inflammation; but there was no alteration as far as I could gather by ſight or feeling, but onely that ſhee cried out more loudly when as I touched it. The fit paſſed, a great heat took her, all her bodie ran down with ſweat, with ſo great wearineſs and weakneſs of all her members, that ſhee could not ſo much as ſtir her little finger. There could bee no ſuſpicion of an Epileptick, for this woman all the time of her agonie did perfectly make uſe of all her ſenſes, did ſpeak, diſcourſ, and had no convulſion. Neither did ſhee ſpare anie coſt or diligence, whereby ſhee might bee cured of her diſeaſ by the help of Phyſicians or famous Surgeons; ſhee conſulted alſo with witches, wizzards and charmers, ſo that ſhee had left nothing unattempted, but all art was exceeded by the greatneſs of the diſeaſ. When I had ſhewed all theſe things at our conſultation, wee all with one conſent were of this opinion, to applie a potential Cauterie to the grieved part, or the tumor. I my ſelf applied it: after the fall of the Eſchar verie black and virulent *ſanies* flowed out, which free'd the woman of her pain and diſeaſ for ever after. Whence you may gather, that the cauſ of ſo great evil was a certain venenate malignitie, hurting rather by an inexplicable qualitie then quantitie; which beeing overcom and evacutated by the Cauterie, all pain abſolutely ceaſed. Upon the like occaſion, but on the right arm, the wife of the Queen's Coach-man at Amboiſ conſulted *Chappellain*, *Caſtellan* and mee, earneſtly craveing eaſ of her pain, for ſhee was ſo grievouſly tormented by fits, that through impatiencie, beeing careleſs of her ſelf, ſhee endeavored to caſt her ſelf headlong out of her chamber window, for fear whereof ſhee had a guard put upon her. Wee judged that the like monſter was to bee aſſaulted with the like weapon, neither were wee deceived, for uſeing a potential Cauterie, this had like ſucceſs as the former. Wherefore the bitterneſs of the pain of the gout is not occaſioned by the onely weakneſs of the joints, for thus the pain ſhould bee continual, and alwaies like it ſelf; neither is it from the diſtemper of a ſimple humor, for no ſuch thing happen's in other tumors of what kinde ſoever they bee of; but it proceed's from a venenate, malign, occult and inexplicable qualitie of the matter: wherefore this diſeaſ ſtand's in need of a diligent Phyſician and a painful Surgeon.

*Lib 3.ſect.22. tract.2.cap. Lib. de ther. ad Piſonem c.15.*

The matter of the gout partake's of occult malignitie.

An hiſtorie.

A terrible fit.

How an Epileptick fit differ's from the Gout.

CHAP.

## CHAP. III.

### *Of the manifeſt cauſes of the Gout.*

The firſt primitive cauſ of the Gout.

ALthough theſe things may bee true which wee have delivered of the occult cauſ of the Gout, yet there bee and are vulgarly aſſigned others, of which a probable reaſon may bee rendred, wherein this malignitie, whereof wee have ſpoken, lie's hid and is ſeated. Therefore as of manie other diſeaſes, ſo alſo of the Gout there are aſſigned three cauſes; that is, the primitive, antecedent, and conjunct: the primitive is twofold, one drawn from their firſt original and their mother's womb, which happen's to ſuch as are generated of Goutie parents, chiefly if whil'ſt they were conceived, this goutie matter did actually abound and fall upon the joints. For the ſeed fall's from all the parts of the bodie, as ſaith *Hippocrates*, and *Ariſtotle* affirm's *lib. de gen. animal.* Yet this cauſe's not an inevitable neceſſitie of haveing the Gout, for as manie begot of ſound and healthful parents ase taken by the Gout by their proper and primarie default; ſo manie live free from this diſeaſ, whoſe Fathers notwithſtanding were troubled therewith. It is probable that they have this benefit and priviledg by the goodneſs of their Mother's ſeed, and the laudable temper of the womb; whereof the one by the mixture and the other by the gentle heat, may amend and correct the faults of the paternal ſeed; for otherwiſe the diſeaſ would becom hereditarie, and goutie perſons would neceſſarily generate goutie; for the ſeed followeth the temper and complexion of the partie generateing, as it is ſhewed by *Avicen.* Another primitive cauſ is from inordinate diet, eſpecially in the uſe of meat, drink, exerciſe and Venerie. Laſtly, by unprofitable humors which are generated and heaped up in the bodie, which in proceſs of time acquire a virulent malignitie; for theſe fill the head with vapors raiſed up from them, whence the membranes, nervs and tendons, and conſequently the joints becom more lax and weak. They offend in feeding who eat much meat, and that of ſundrie kindes at the ſame meal, who drink ſtrong wine without anie mixture, who ſleep preſently after meat, and which uſe not moderate exerciſes; for hence a plenitude, an obſtruction of the veſſels, cruditites, and the encreaſ of excrements, eſpecially ſerous. Which if they flow down unto the joints, without doubt they cauſ this diſeaſ; for the joints are weak either by nature or accident in compariſon of the other parts of the bodie: by nature, as if they be looſ & ſoft from their firſt original: by accident, as by a blow, fall, hard travelling, runing in the ſun by day, in the cold by night, racking, too frequent Venerie, eſpecially ſuddenly after meat; for thus the heat is diſſolved by reaſon of the diſſipation of the ſpirits cauſed in the effuſion of ſeed, whence manie crude humors, which by an unſeaſonable motion are ſent into the ſinews and joints. Through this occaſion old men, becauſ their native heat is the more weak, are commonly troubled with the Gout. Beſides alſo the ſuppreſſion of excrements accuſtomed to bee avoided at certain times, as the courſes, hemorhoids, vomit, ſcouring, cauſeth this diſeaſ. Hence it is, that in the opinion of *Hippocrates*, A woman is not troubled with the Gout, unleſs her courſes fail her. They are in the ſame caſe who have old and runing ulcers ſuddenly healed, or *varices* cut and healed, unleſs by a ſtrict courſ of diet they hinder the generation and encreaſ of accuſtomed excrements. Alſo thoſe which recover of great and long diſeaſes, unleſs they bee fully and perfectly purged, either by nature or art, theſe humors falling into the joints, wch are the reliques of the diſeaſ, make them to becom goutie: and thus much for the primitive cauſ. The internal or antecedent cauſ is, the abundance of humors, the largeneſs of the veſſels and paſſages which run to the joints, the ſtrength of the amandating bowels, the looſneſs, ſoftneſs and imbecilitie of the receiving jonits. The Conjunct cauſ is the humor it ſelf impact and ſhut up in the capacities and cavities of the joints. Now the unprofitable humor, on everie ſide ſent down by the ſtrength of the expulſive facultie, ſooner linger's about the joints, for that they are of a cold nature and denſ, ſo that once impact in that place, it cannot bee eaſily digeſted and reſolved. This humor then cauſeth pain by reaſon of diſtention or ſolution of continuitie, diſtemper, and beſides the virulencie and malignitie which it acquire's. But it ſavor's of the nature ſomtimes of one, ſomtimes of more humors; whence the Gout is either phlegmonous, or eryſipilatous, edematous, or mix't. The concourſ of flatulencies, together with the flowing down humors, and as it were tumult by the hinderance of tranſpiration, encreaſeth the dolorifick diſtention in the membranes, tendons, ligaments and other bodies wherein the joint conſiſt's.

*Lib. de aere, loc. & aqua. Lib. 1, cap. 17.*

*Lib. 3 ſen. 22. tract. 2. cap. 5.*

Another primitive cauſ of the Gout.

*Aph. 19. Sect. 9.*

The antecedent cauſ of the Gout.

The conjunct.

Five cauſes of the pain of the Gout.

## CHAP. IV.

### *Out of what part the matter of the Gout may flow down upon the joints.*

What and how the matter of the gout com's down from the brain.

THe matter of the Gout cometh for the moſt part fom the liver, or brain; that which deſcend's from the brain is phlegmatick, ſerous, thin and clear, ſuch as uſually drop's out of the noſe, endued with a malign and venenate qualitie. Now it paſſeth out by the

muſcu-

muſculous skin and *pericranium*, as alſo through that large hole by which the ſpinal marrow, the brain's ſubſtitute, is propagated into the ſpine, by the coats and tendons of the nervs into the ſpaces of the joints, and it is commonly cold. That which proceed's from the liver is diffuſed by the great vein and arteries filled and puffed up, and participate's of the nature of the four humors, of which the maſs of the blood conſiſt's, more frequently accompanied with an hot diſtemper, together with a goutie malignitie. Beſides this manner of the Gout, which is cauſſed by defluxion, there is another which is by congeſtion; as, when the too weak digeſtive facultie of the joints cannot aſſimilate the juices ſent to them. Gout by congeſtion.

## CHAP. V.

*The ſigns of the Arthritick humor flowing from the brain.*

When the defluxion is at hand, there is an heavineſs of the head, a deſire to reſt, and a dulneſs with the pain of the outer parts, then chiefly perceptible, when the hairs are turned up, or backwards; moreover, the muſculous skin of the head is puffed up as ſwoln with a certain œdematous tumor; the patients ſeem to bee much different from themſelvs by reaſon of the functions of the minde hurt by the malignitie of the humor, from whence the natural faculties are not free; as the crudities of the ſtomach, and the frequent and acrid belchings may teſtifie.

## CHAP. VI.

*The ſigns of a goutie humor, proceeding from the liver.*

The right Hypocondrie is hot in ſuch goutie perſons, yea the inner parts are much heated by the bowel; blood and choler carrie the ſway, the veins are large and ſwoln, a defluxion ſuddenly fall's down, eſpecially if there bee a greater quantitie of choler then of other humors in the maſs of the blood. But if, as it often fall's out, the whole blood, by means of crudities degenerate into phlegm and a whayiſh humor; then will it com to paſs, that the Gout alſo, which proceed's from the liver, may bee pituitous or phlegmatick, and participate of the nature of an *anaſarca*, like that which proceed's from the brain. As if the ſame maſs of blood decline towards melancholie, the Gout which thence ariſeth, reſemble's the nature of a *ſcirrhus*; yet that can ſcarce happen, that melancholie by reaſon of the thickneſs and ſlowneſs to motion may fall upon the joints. Yet notwithſtanding, becauſe wee ſpeak of that which may bee of theſe, it will not bee unprofitable briefly to diſtinguiſh the ſigns of each humor, and the differences of Gouts to bee deduced from thence. When the Gout, which proceed's from the default of the liver, aſſimilate's the nature of an *œdema*. Why the Gout ſeldom proceed's from melancholie.

## CHAP. VII.

*By what ſigns wee may underſtand this or that humor to accompanie the goutie malignitie.*

You may give a gueſs hereat by the patient's age, temper, ſeaſon of the year, condition of the countrie where hee live's, his diet and condition of life, the increaſ of the pain in the morning, noon, evening or night, by the proprietie of the beating, pricking, ſharp or dull pain; by numneſs, as in a melancholie gout or itching; as in that which is cauſſed by tough phlegm, by the ſenſible appearance of the part in ſhape and color (as for example ſake in a phlegmatick Gout, the color of the affected part is verie little changed from its ſelf and the neighboring well parts, in a ſanguine Gout it look's red, in a cholerick it is fierie or pale, in a melancholie livid or blackiſh) by the heat and bigneſs which is greater in a ſanguine and phlegmatick then in the reſt, by the change: and laſtly, by things helping and hurting. And there bee ſom, who for the knowledg of theſe differences, wiſh us to view the patient's urine, and feel their pulſ, and conſider theſe excrements, which in each particular nature are accuſtomed to abound or flow, and are now ſuddenly and unaccuſtomarily ſuppreſt. For hence may bee taken the ſigns of the dominion of this or that humor. But a more ample knowledg of theſe things may bee drawn from the humors predominant in each perſon, and the ſigns of tumors formerly delivered. Onely this is to bee noted by the way, that the Gout which is cauſſed by melancholie, is rare to bee found.

## CHAP. VIII.

*Prognoſticks in the Gout.*

BY the writeings of Phyſicians the pains of the Gout are accounted amongſt the moſt grievous and acute; ſo that through vehemencie of pain manie are almoſt mad, and wiſh themſelvs dead. They have certain periods and fits, according to the matter and condition of the humor wherin this malign and inexplicable goutie virulencie reſide's. Yet they more frequently invade in the Spring and Autumn; ſuch as have it hereditarie are ſcarce ever throughly free therfrom, as neither ſuch as have it knottie: for in the former it was born with them, and implanted, and as it were fixed in the original of life; but in the other, the matter is becom plaſter-like, ſo that it can neither bee reſolved nor ripened. That which proceed's from a cold and pituitous matter, cauſſeth not ſuch cruel tormenting pain, as that which is of an hot, ſanguine or cholerick cauſ, neither is it ſo ſpeedily healed, for that the hot and thin matter is more readily diſſolved; therfore commonly it ceaſeth not until fortie daies bee paſt: Beſides alſo, by how much the ſubſtance of the affected part is more denſ, and the expulſive facultie more weak, by ſo much the pain is more tedious. Hence it is, that thoſe goutie pains which moleſt the knee, heel and huckle-bone, are more contumacious. The Gout which proceed's of an hot matter, reſt's not before the fourteenth or twentieth daie. That which is occaſioned by acrid choler, by the bitterneſs of the inflammation and pain cauſſeth a difficultie of breathing, raveing, and ſundrie times a gangrene of the affected part, and laſtly death; and healed, it often leav's a palſie behinde it. Amongſt all the goutie pains, the Sciatica challengeth the prime place, by the greatneſs of the pain and multitude of ſymptoms; it bring's unquietneſs and watching, a fever, diſlocation, perpetual lameneſs, and the decaie of the whole leg, yea and often-times of the whole bodie. Now lameneſs and leanneſs, or decaie of the part are thus occaſioned, for that the decurrent humor forceth the head of the thigh-bone out of the cavitie of the huckle-bone; this beeing forced out preſſeth the muſcles, veins, arteries, and that notable and large nerv which run's along the thigh, even to the furtheſt joints of the toes, and by the waie is diverſly diſperſed over the muſcles of the whole leg: Therfore becauſ the head of the thigh is put out of its place, the patient is forced to halt; becauſ the veſſels and nervs are oppreſſed, the nouriſhment and ſpirits do not freely flow into the parts ther-under, whence proceed's their decaie. Yet it ſundrie times happen's, that the head of the thigh beeing not diſplaced, manie halt becauſ the viſcid humor, which is naturally implanted in that place, and continually flow's thither, both for the nutrition of theſe parts, and the lubrication of the joint for quicker motion, is hardened by heat and idleneſs, and the other unprofitable humors which flow down do there concrete, and ſo intercept the libertie of motion. A groſs and viſcid humor into what joint ſoever it falleth and ſtaieth, doth the ſame. For by concretion it turn's into a plaſter-like nature at or near the joint, poſſeſſing the cavities therof, and it depraveth the figure of the part, makeing it crooked and knotted, which formerly was ſtraight and ſmooth. Furthermore, everie diſtemperature cauſſed by the defluxion of humors, if it ſhall lie long upon anie part, deprave's all the actions, and oft-times wholly aboliſheth them; ſo that there may bee three cauſſes of the leanneſs or decaie of the joint by the Gout, the obſtruction or compreſſion of the veſſels, idleneſs and an hectick diſtemper: but two of lameneſs, diſlocation and the concretion of an adventitious humor impact in the joint. If contrarie to cuſtom and reaſon the pains of the Gout do not go away, or return at their accuſtomed periods, moſt grievous and dangerous diſeaſes theron follow; for the matter accuſtomed to flow down into the joints, if it ſeiz upon the ſubſtance of the liver, cauſſe's a phlegmon; if it ſtaie in the larger veins, a continual fever: if it flow in the membrane inveſting the ribs, a pluriſie; if it betake it ſelf to the guts, and adhere to their coats, the colick, or *Iliaca paſſio*: and to conclude, it produceth divers other ſymptoms, according to the diverſitie of the parts whereto it flow's and abide's. For thus ſundrie that have been troubled with the Gout, becom paralytick, becauſ the matter, which formerly flowed down into the joints, ſtaie's in the ſubſtance and pores of the nervs, and ſo hinder's the ſpirit that it cannot freely in its whole ſubſtance paſs through them: hence therfore com's the reſolution of the part, whereinto the nerv is inſerted. Old men can never bee quite or abſolutely cured of the Gout, for that the maſs of their blood is ſo departed from its primarie and native goodneſs, that it can no more bee reſtored, then dead or ſowred wine. The Gout, which proceed's from a cold cauſ, invadeth ſlowly, and by little and little, and is helped by the uſe of hot things; that which is from an hot matter, quickly ſhew's it ſelf, and is helped by the uſe of cold things. Now, although the Gout more frequently return's in the Spring and Fall, yet it com's in the midſt of winter, the nervs beeing weakned by the exceſs of cold, and the humors preſſed out; otherwhiles in the midſt of Summer, the ſame beeing diffuſed and diſſipated. Laſtly, it com's at anie time or ſeaſon of the year, if thoſe who are ſubject to this diſeaſ feed plenteouſly, and do all things accord-

The Gout frequent in the Spring & Fall. What Gout uncureable.

*Gal. ad aphor. 49. ſect. 5.*

Why the Sciatica cauſſeth lameneſs.

Thee cauſſes of the lameneſs or decay of the limbs.

How the Gout turn's into the Palſie.

Why the Gout take's one in winter, and the midſt of ſummer.

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ing to their own mindes and desire. Those who are troubled with the Gout, feel and perceiv change of weather, storms, rains, snows, windes, and such like, before they com. A Southerlie constitution of the air, for example, fill's the bodie with humidities, and stir's up the humors that lie quiet in the bodie; and therefore caus defluxions upon the weaker parts, such as the joints, both by nature, as beeing without blood and flesh, as also by accident, for that they a long time have been accustomed to bee so tormented; therefore their pains are increased in a wet season. Manie of these that are troubled with the Gout, desire venerie in the bitterness of their pain, becaus the internal heat wherewith they then are inflamed, doth not dissipate into spirits and air, as the feverish heat doth, but dissolv's, and as it were melt's down the seminal humor, which dissolved, flow's to the genitals, filleth and distend's them. The same thing befall's carriage and running horses, for in these by labor, much heat send's flatulencies to the bottom of the bellie. Yet venerie is verie hurtful to such as are troubled with the Gout, becaus it dissipate's the spirits and native heat, and encreaseth the unnatural heat; whereby it cometh to pass, that the nervous parts are weakned, and the pain exasperated. Rich men, that is, such as feed riotously on varietie of dainties, and in the mean space live idlely and lazily are more frequently and cruelly tormented with the Gout then poor people, who live spareingly and hardly: Wherefore there have been seen not a few of such rich and riotous persons, who haveing spent their estates, have therewith changed their health, together with their fortune and diet, and so have been wholly freed from the Gout.

Why such as have the Gout upon them, do oft-times desire venerie.

Venerie hurtful in the Gout.

## CHAP. IX.

*The general method of preventing and cureing the Gout.*

THose who desire to prevent the Gout, must not glut themselvs with meat, must bee quick to labor, and abstain from wine & venerie, or certainly must not use them, unless for their healths sake, must vomit and purge at certain times. *Hippocrates* write's, that boies are not troubled with the Gout before the use of venerie. Yet at this day manie Eunuchs are seen to have the Gout, but especially those who abound with idleness and pleasure; yet these wee have heretofore mentioned are verie effectual, not onely for the prevention, but also for the cure of the present disease. Yet wee must diligently distinguish the causes, what they bee, and whence they may proceed, and oppose thereto remedies contrarie in quantitie and qualitie. There are absolutely three distinct causes of the Gout: A tainture from the parents; a corruption of the humors by diet and air; a native, or adventitious weakness of the joints. Against these there is a two-fold indication: the first is the evacuation and alteration of the peccant humors, the other the strengthning of the weak joints. These two shall bee performed by diet conveniently appointed, purgeing, blood-letting, provocation of the hemorrhoids, courses, vomit, sweat, urine, and fit application of local medicines. Therefore, when the time shall com, wherein the Gout accustometh to return by cours, the patient shall have a care of himself by a diligent manner of diet, hee shall lessen the matter of the disease by phlebotomie (if that the Gout shall arise from the blood) from the opposite part, that by the same means revulsion and evacuation may bee made; as if the upper parts bee inflamed, blood shall bee drawn from the lower; if on the contrarie the lower, out of the upper, alwaies observing the straightness of the fibres. Thus the right arm beeing troubled with a goutie inflammation, the *Sapheia* of the right leg shall bee opened, and so on the contrarie; but if this general blood-letting beeing premised, the pain shall not ceas, it will bee requisite to open the vein next to the pain, which I have often performed with happie succes.

*Aph.* 30. *sect.* 6.

Two general scopes of cureing the Gout.

Whence blood must bee let in the Gout.

Yet phlebotomie hath not the like effect in all, for it is not available to such as are continually and uncertainly troubled with goutie pains, or whose bodies are weak and cold, wherein phlegm onely is predominant. Wee may say the same of purgeing, for though it bee oft-times necessarie, yet too frequently re-iterated, it prove's hurtful; furthermore, neither of these remedies is usually verie profitable to such as observ no order in meat & drink, which use venerie too intemperately, who abound with crude and contumacious humors; whose joints by long vexation of the disease, have contracted an hectick distemper and weakness, so that they are departed from their natural constitution, and suffered a great change of their proper substance. Wherefore as often as these greater remedies shall bee used a Physician shall bee called, who according to his judgment may determine thereof. For oft-times diet proveth more available then medicines: therefore the patient (if the matter of the Gout bee hot) shall either drink no wine at all, or elf verie much allaied, that is, as much as his custom and the constitution of his stomach can endure. A fit time for purgeing and bleeding is the Spring and Autumn, becaus, according to the opinion of *Hippocrates*, Gouts reign chiefly in these season; in Autumn, for that the heat of the precedent Summer debilitateth the digestive facultie, the native heat beeing dissipated: as also the eating of Summer-fruits hath heaped up plentie of crude humors in the

What goutie persons finde no benefit by phlebotomie.

In what Gout diet prove's more effectual then medicines.

*Aph.* 55. *sect.* 6.

bodie, which eaſily flow down into the paſſages of the joints opened and dilated by the Summer's heat: add heerunto, that the inequalitie or variableneſs of Autumn weakneth all nervous parts, and conſequently the joints. But in the Spring, for that the humors forced inward, by the coldneſs of the Winter, are drawn forth from the centre to the circumference of the bodie, and beeing attenuated, fall into the joints upon a verie ſmall occaſion, therfore theer is great both neceſſitie and opportunitie for evacuation, which if it ſhall not avert the accuſtomed fit, yet it will make it more gentle and eaſie.

## CHAP. X.

### *Of Vomiting.*

To what gout vomiting is to bee uſed.

VOmiting is by all the Antients exceedingly commended, not onely for the prevention, but alſo for the cure, eſpecially when as the matter floweth from the brain and ſtomach; for the phlegmatick, ſerous and cholerick humors, which uſually flow from the joints, are excluded and diverted by vomit, and alſo theer is attenuation of that phlegm, which beeing more thick and viſcid, adhereth to the roots of the ſtomach: yet you muſt conſider and ſee, that the patient bee not of too weak a ſtomach and brain, for in this caſe vomiting is to bee ſuſpected. For the time, ſuch as have excrementitious humors flowing down to the ſtomach through anie occaſion, as by exerciſe and motion, muſt vomit before they eat; on the contrarie, ſuch as are over-charged with an old congeſtion of humors, muſt vomit after they have eaten ſomthing. Certainly, it is ſafer vomiting after meat, then it is before. For the drie ſtomach cannot, unleſs with great contention and ſtraining, free it ſelf from the viſcid humors impact in the coats thereof; and hence there is no ſmall danger of breaking a vein or arterie in the cheſt or lungs, eſpecially if the patient bee ſtraight-cheſted, and long-necked, the ſeaſon cold, and hee unaccuſtomed to ſuch evacuation. I remember that with this kinde of remedie I cured a certain Gentleman of Geneva, grievouſly moleſted with a cruel pain in his ſhoulder, and therby impotent to uſe his left arm; the Phyſicians and Surgeons of Lions ſeemed to omit nothing elſ for his cure. For they had uſed purgeing, phlebotomie, hunger, a diet-drink of *Gudiacum* and *China* (although his diſeaſ was not occaſioned by the *Lues Venerea*) and diverſ other topick medicines, neither yet did they anie thing avail. Now learning by him that hee was not apt to vomit, but that it was difficult to him, I wiſhed him to feed more plentifully, and that of manie and ſundrie meats; as fat meat, onions, leeks: with ſundrie drinks; as beer, ptiſan, ſweet and ſharp wine, and that hee ſhould as it were over-charge his ſtomach at his meal, and preſently after get him to his bed; for ſo it would happen, that nature not endureing ſo great confuſion and perturbation of meats and drinks, wherof ſom weer corrupted alreadie in the ſtomach, and other-ſom ſcarce altered at all, nature not endureing this confuſion and perturbation, would eaſily, and of its own accord provoke the ſtomach to vomit; which that it might the beteer ſucceed, hee ſhould help forward nature's endeavor, by thruſting his finger or a feather into his throat, that ſo the thick and tenacious phlegm might by the ſame means bee evacuated: and not content to do thus once, I wiſhed him to do the like the ſecond and third daie following; for ſo it verifieth that saying of *Hippocrates*, *The ſecond and third daie exclude the reliques of the firſt*: afterwards, that hee ſhould vomit twice a month, chaw maſtick faſting, rub his neck and the pained part with *aqua vitæ*, ſtrengthened by infuſing therin lavander, roſemarie, and cloves groſly beaten, confirm his arm by indifferent exerciſe: hee performed all this, and ſo became free from his pain, and recovered the uſe of his arm. Thoſe who do not like ſuch plentiful feeding, ſhall drink a great quantitie of warm water, wherin radiſh roots have been boiled, and they ſhall have a care leaſt by uſing their ſtomachs to this excretion by vomit, they weaken the digeſtive and retentive facultie therof. Wherfore ſuch as can naturally, ſhall think it ſufficient to vomit twice a month.

What time the fitteſt therfore.

An hiſtorie.

How to make one vomit eaſily.

*Lib. de rat. victûs.*

## CHAP. XI.

### *The other general remedies for the Gout.*

How diuretick are good for the Gout.

THe defluxion of ſerous humors is verie fitly diverted from the joints by the urine by the uſe of diuretick medicines. Therfore the roots of ſorrel, parſlie, *ruſcus*, *aſparagus*, and graſs, and the like, ſhall bee boiled in broth, and given to ſuch as have the Gout: for when the urine floweth much and thick, the pain is leſſned. Manie have found benefit by iſſues; for the Arthritick malignitie flow's forth of theſe, as by rivelets; experience ſhew's it in ſuch as are troubled with the *Lues Venerea*, for in thoſe that you cannot overcom the malignitie by the proper antidote, that is, Quick-ſilver, they feel no greater eaſ of the pain, then by application of cauſticks, and makeing of iſſues. They ſhall bee made in ſundrie places, according to the difference of the pained joints,

Iſſues or fontanels.

joints, to wit, in the beginning of the neck, if the defluxion proceed from the brain, and fall into the joints of the collar-bones or shoulder; if into the elbow or hand, under the muscle *Epomis*; if into the hip, knees and feet, som three fingers breadth under the knee, on the in-side: for thus theer will follow more plentiful evacuation, by reason that the *Sapheia* runneth down that way. Yet if the patient bee troubled with much business, and must travel much on horse-back, then shall they bee made on the out-side of the leg, between the two bones thereof, that so they may trouble him the less in rideing. If anie had rather use an actual cauterie, let him take such an one as is triangular and sharp, that so hee may with more speed and less pain perform that which hee intend's, and let him thrust it through a plate of iron which hath an hole therein, and let the place bee marked, least hee should err; the ulcer shall bee kept open, by putting in a pill of gold, silver, lint, of the root of orris, hermodactiles, gentian, wax, wherwith som powder of vitriol, mercurie or alum shall bee incorporated, least it should fill up with flesh sooner then the Physician shall think fit. In the mean space, the head, oft-times the original of the evil, shall bee evacuated by takeing in the winter the pils *cochiæ*, and *de Assajereth*; but in summer *sine quibus*, or *Imperiales*, before the Full of the Moon. ℞.*pul.hyeræ simp.*℥i. *agar.recent. troch. & rhei an.*℥ii. *myrobal. chebul.*℥ß. *tamarind.* ℈ii. *cum infusione senæ, fiat massa de quâ formentur pill.*vi. *pro drachmâ*; let the patient take two before supper everie eighth daie; the daie after hee shall drink som broth of the decoction of cicers, and the diuretick roots. Also these following pils will bee good to purge the phlegmatick and serous humor. ℞.*pillular. fætid. & de hermodactil.an.* ℥ß. *formentur cum succo vel syrup.rosar.solut.* Or else, ℞.*aloës* ℥iii. *agarici trochis. & rhei, an.*℥i. *massæ pilul.arthrit. & de hermodact.an.* ℈ii. *diacrid.*℈. *cum melle rosato fiat massa, capiat pondus,* ℥i. as the Physician shall think fit, by whose advice these shall bee used and changed as occasion shall offer it self, and the nature of the humor causing the disease. The day after the purgeing, the patient shall take three hours before meat half a dram of treacle, to strengthen the entrails: pils are preferred before liquid medicines, for that by their long staie in the stomach they easily attract the noxious humor from the brain, and the other more distant parts. I have known som Physicians, who mixing with ordinarie pils a good quantitie of scamonie, as seven or eight grains, with a little ginger, least it should hurt the stomach, have purged by stool a great quantitie of serous humors; the daie following they gave barlie cream to correct the harm which the scamonie may have don to the stomach. Others for the same purpose give treacle, which doth not onely strengthen the entrails, but also weaken's the virulencie of the goutie malignitie; the orifice of the ventricle must bee shut after meat, that so the vapors ascending to the brain may bee restrained: for this purpose common drige-powder, marmelate, or conserv of roses are good. In a wet season use cephalick perfumes thus made: ℞.*thuris, vernicis, & mastich. an.*℥i. *granorum juniperi, baccarum lauri, an.*℥ß. *ligni aloës* ℥ii. *assæ odoratæ* ℥i.ß. Let them bee grosly beaten; let the fume bee received in tow, or carded cotton, and so applied to the head. Also the excrementitious humors shall bee dried up by the following powder strowed on the patient's head for fifteen daies. ℞.*fol. ros. rub. senæ, staechad. utriusque an.*m.ß. *milii,* ℥iiii. *furfuris loti in vino albo,* ℥iii. *florum chamæm.melil.an.* p.i. *sem.anisi,* ℥i. *salis com.*℥ii. *fiat omnium pulvis.* Let it bee put into linnen bags, with which, beeing warmed at the fire in a frying-pan, and kept with stirring, the head shall bee rubbed. Let the following medicine bee chawed, and kept in the mouth in the form of a masticatorie, in the time of the falling down of the defluxion. ℞. *cubelarum, nucis moschat. glycyrrhiz.anis.an.*℥i. *pyrethri,* ℥ii. *mastich.rad. staphisagr. eryngii, an.*℥ii. Let them all bee made into powder, and mixed together, and tied up in a little taffatie to the bigness of a hasel-nut, and let them bee rowled up and down the mouth with the tongue to cause spitting or salivation. Working with the hands, and frictions of the arms, especially in the morning after the evacuation of the excrements, are good for such as are troubled with the Gout in the feet, for so, it not onely causeth revulsion from the feet, but also the resolution of that which is unprofitable.

Where to bee made.

An actual cauterie.

Pils.

Common pils with the addition of scamonie.

Treacle, how useful in the Gout.

Cephalick fumigations.

Cephalick bags.

A masticatorie.

## CHAP. XII.

*What diet is convenient for such as have the Gout.*

AFter the bodie is once fed, they must not return to meat before that the concoction bee perfected in the stomach, least the liver bee forced to draw by the mesaraick veins that which is yet crude and ill digested, and as it were forced thence. Whence the depravation of the nutriment of the whole bodie; for the following decoctions doe not amend the default of the first. Let them make choice of meat of good juice and easie digestion, rosted for such as are phlegmatick, but boiled for such as are cholerick: As they shall shun much varietie one meal, so must they eschue the use of pulses, milk-meats, sallads, and sharp things; as verjuice, vineger, the juice of oranges, and citrons. They shal not eat unless they bee hungrie, & shall desist ther-from before they bee fully satisfied, if it bee but for this, that whil'st the native heat is busied in the digestion of meat

The fault of the first concoction, is not amended in the after.

plenteouſly eaten, it is diverted from the concoction of the noxious humors. The fleſh of great fowl, as ſwans, cranes, peacocks are not of laudable juice, and are with more difficultie digeſted in the ſtomach. Som of the ancients have diſallowed of the eating of capons, and the like birds, becauſ they are ſubject to bee troubled with the Gout in the feet. Fiſhes are to bee ſhunned, for that they heap up excrementitious humors, and are eaſily corrupted in the ſtomach, yea and relax it by continual uſe. Of the fleſh of beaſts, veal is moſt to bee commended, for that it breed's temperate blood, and laudable juice, and is eaſily digeſted. Neither in the mean time is mutton to bee found fault withall. But the like hunger or abſtinence muſt not bee appointed to all men troubled with the Gout, for ſuch as are of a ſanguine and cholerick complexion, becauſ they are endued with much, and much waſteing heat, are to bee refreſhed with more plentiful nouriſhment; for hunger ſharpen's choler, and ſo augment's their pains; neither in the *interim* muſt they bee fed with too much moiſt meats, for too much moiſture, beſides that it is the autor of putrefaction, will cauſ defluxions, and draw down the matter to the joints. Therefore the cholerick humor muſt bee incraſſated and refrigerated by takeing things inwardly, and applying things outwardly, leaſt by its tenuitie it ſhould fall down into the grieved parts. To this purpoſe conduce broths altered with lettuce, purſlain, ſorel, and the like herbs, and barlie creams made with a decoction of the four cold ſeeds. Phlegmatick bodies, by reaſon that they have not ſo vigorous heat, do as it were carrie their provant about them, wherefore they muſt not bee fed, neither with manie, nor with moiſt meats. All that are troubled with the Gout, muſt ſhun thoſe things which are hard of digeſtion, and which are ſoon corrupted, for they all have a certain remiſs fever, which diminiſheth the native heat, and make's the meats apt to putrefie. Too plentiful drinking not onely of wine, but alſo of anie other liquor, is to bee avoided. For by too great a quantitie of moiſture the meat float's in the ſtomach, and the native heat is in ſom ſort extinguiſhed, whence proceed crudities. Som Phyſicians commend the uſe of white wine, for that it provoke's urine, which is not altogether to bee diſallowed, if ſo bee that the bodie bee free from excrements, otherwiſe by this, as it were a vehicle, eſpecially if the temperature of the bodie bee ſomwhat more hot, they ſhall bee carried down into the joints. Therefore in ſuch a caſe I ſhould rather adviſe them to uſe claret, which is ſomwhat weak and aſtringent, for that it doth not ſo much offend the head nor joints, and it ſhut's and ſtrengthen's the orifices of the veſſels. Yet it will bee more convenient wholly to abſtain therefrom, and inſtead thereof to drink an *Hydromel* made after this manner: ℞. *aquæ* ℔.iiii. *mellis opt.* q.i. *bulliant ad conſumptionem* ℔.i. *bene deſpumando, adde ad finem, ſalviæ* p.i. *imò ſi æger ſit pituitoſus, cinnamomi aut caryophillorum momentum.* For cholerick perſons make a ſugred water thus: ℞. *aquæ fontis* ℔.iiii. *ſaccari* ℔.ß. *colentur per manicam ſine ebullitione, addendo in fine cinnamomi* ʒii. For thus the ſtomach ſhall alſo bee ſtrengthened; alſo hee may drink *ptiſan*, wherein at the end of the decoction ſhall bee boiled ſom dried roſes, or elſ ſom ſyrup of pomegranates added thereto, leaſt it ſhould offend the ſtomach; as ſoon as it come's from off the fire, let it ſtand and ſettle, and then ſtrain it through an hypocras-bag, or clean linnen cloth.

Capons ſubject to the gout.

Cholerick perſons cannot away with long faſting.

Phlegmatick bodies in faſting feed upon themſelvs.

White wine not good for the gout.

Claret may bee the ſafelier drunk.

*Hydromel* moſt ſafely.

An *Hydroſacarum.*

## CHAP. XIII.

### *How to ſtrengthen the Joints.*

IT is a matter of much conſequence for the prevention of this evil, to ſtrengthen the joints, whereby they may bee able to reſiſt the humors preternaturally falling down upon them. Wherfore it is good morning and evening to rub them with *oleum omphacinum*, that is, oil made of olives not com to their perfect maturitie; or with oil of roſes mixed with common ſalt finely powdered. It may alſo bee mixed with common oil, adding thereto the powder of Hart's-horn, as that which hath an aſtringent and drying facultie. Alſo it is good to bathe them in this following lee: ℞. *cort. granat. nucum cupreſſ. gallarum, ſumach. cortic. querni, an.* ʒii. *ſalis com. alumin. roch. an.* ʒi. *ſalviæ, roriſmar. lavendul. lauri, ivæ arthretic. an.* m.i. *roſar. rub.* m.ß. *bulliant omnia in ſex* ℔. *vini craſſi & aſtringentis, & lixivio parato ex aquâ chalibeatâ, & cinere querno.* Then foment the part with ſponges or cotton-cloths; after, this fomentation ſhall bee carefully wiped and dried with hot linnen cloths, takeing heed of cold. The juice of unripe haws tempered with oxycrate is a ſingular thing for this purpoſe. But if you deſire to ſtrengthen the joints weakned by a cold cauſ, then, ℞. *ſalviæ, roriſm. thymi, lavendul. laur. abſinth. an.* m.i. *caryophyl. zinzib. piperis, conquaſſatorum an.* ʒi. *infundantur in aquâ vitæ & vini rubri aſtringentis, an.* ℔.iiii. *bulliant leniter in balneo mariæ.* With this liquor foment the joints morning and evening. Som think it good to ſtrengthen the joints, to tread grapes in vintage-time, which if they bee not able to do, then let them waſh their feet in the muſt or new preſſed wine. Alſo bags may bee thus made for the ſame purpoſe. ℞. *ſalis com. alum. roch. cort. granat. ſumach. berberis, nucum cupreſſi, an.* ʒiiii. *fol. ſalviæ, roriſm. roſar. rub. an.* m.ß. Let them bee all put in linnen bags, and boiled in lee, and ſo make a decoction for to foment the joints.

A fomentation to ſtrengthen the joints.

The juice of haws with oxycrate.

Bags.

CHAP.

## CHAP. XIV.

*Of the Palliative Cure of the Gout and the material cauſes thereof.*

HEer alſo muſt wee conſider the cauſes whence this diſeaſ proceed's, the temper of the diſeaſed bodie, the parts affected, and thoſe from whence it proceed's. For as theſe are not alwaies alike, ſo neither can one and the like remedie bee uſeful in everie Gout. For firſt thoſe which proceed of a cold cauſ require other remedies, then thoſe which ariſe from a hot, and that which proceed's from anie one ſimple humor, then that from wch ariſeth diverſ mixed together. For Choler alone cauſeth cruel pains, but tempered by the admixture of Phlegm, it becom's more gentle. Furthermore ſom remedies are good in the beginning, ſom in the encreaſ, and ſom at other times. Neither may wee uſe repercuſſives in the Sciatica, as wee may in the Gout of the feet and other joints; unleſs peradventure the part bee fearfully inflamed. Takeing theſe things to conſideration wee muſt obſerv that the Palliative cure of that Gout, which cannot abſolutely bee helped, as that which is hereditarie and inveterate, is performed by four ſcopes. The firſt is by appointing a convenient diet in the *ſix things* wch are termed *not-natural*. The ſecond by evacuateing & diverting the antecedent matter, both by purgeing and phlebotomie. The third by topick medicines according to the condition of the morbifick humor and nature. The fourth by correcting the ſymptoms, but eſpecially the pain, whereof in theſe affects there is oft-times ſo great exceſs by reaſon of the inexplicable and invincible malignitie of the virulent qualitie aſſociateing the humor that it alone is oft-times ſufficient to kill the patient. And becauſ the varietie of morbifick cauſes, bring's a varietie of remedies, fitted to theſe four intentions, therefore it behoov's a Phyſician to bee moſt attentive in the diſtinction of the cauſes. For hee may bee eaſily deceived and miſtake one for another; for arthritick pains proceeding from a cold matter, if they bee mitigated by the application of Narcotick and cold medicines, it may induce us to believ that the material cauſ is hot, though really it bee not ſo; for Narcoticks aſſwage pain, not for that they are contrarie to the cauſ thereof, but becauſ they take away the ſenſ by induceing a numneſs; on the contrarie, the material cauſ may ſomtimes ſeem cold, which notwithſtanding is hot, for that it becom's better by application of hot medicines, that is, by takeing an argument from that which help's, becauſ contraries are cured by contraries, and the like preſerved by the like. But herein conſiſt's the error, for that hot medicines profit not by their contrarietie, but by the attenuation of the groſs matter, by the rarefaction of the skin and diſſipateing them into air. Whence you may gather, that an argument drawn from that which help's and hurt's, is verie deceitful: moreover it may happen that a large quantitie of cold matter flowing down from the brain, may cauſ great pain by reaſon of the virulencie, and a ſmall quantitie of choler mixed therewith, which ſerv's for a *vehicle* to carrie down the tough and ſlow phlegm into the joints, whence the patient becom's thirſtie and feveriſh by reaſon of the heat and inflammation of theſe parts, wherby ſuch as are leſs cautelous and heedie will eaſily bee induced to beleev that ſom hot matter is the occaſion of this Gout. Now when as not ſom one ſimple humor but different by reaſon of mixture, cauſeth the Gout, the yellowiſh color of the part may deceiv one, as, if the evil matter ſhould proceed from choler onely, which by the tenuitie of its ſubſtance leaving the center, eaſily poſſeſſeth the circumference of the bodie or part: and notwithſtanding much phlegm beeing as it were enraged by the admixtion of a little choler, may bee the chief cauſ of the diſeaſ, and may peradventure bee diſcovered by the encreaſ of pain in the night ſeaſon. A fever ariſeing by means of pain and watching may encreaſ the conceived opinion of choler, which attenuateing and diffuſeing the humors, drive's them into the joints, and cauſeth fierie urines, tinctured with much choler, and a quick pulſ. Yet notwithſtanding the Phyſician ſhall bee in an error, if deceived with theſe appearances, hee attempt the cure of this Gout, as ariſeing from a hot, and not from a cold cauſ: yet I am not ignorant that the cure of the proper diſeaſ muſt bee neglected for the cure of the ſymptoms. Beſides alſo it may com to paſs that choler may bee the cauſ of the Gout, aud notwithſtanding no ſigns thereof may appear in the skin and ſurface of the affected part, becauſ the coldneſs of the ambient air, and the force of applied Narcoticks may have deſtroied the color of the juices lying therunder, and as it were imprinted a certain blackneſs. It alſo happen's, that the bodie beeing over-charged with a great quantitie of groſs and viſcid humors, the expulſive facultie may diſcharge ſom portion thereof unto the joints, but leav the reſt impact in the cavitie of ſom entrail, where cauſing obſtruction and putrefaction may preſently cauſ a fever, and that intermitting, if it bee ſmall, and obſtruct onely the leſſer veins, and theſe of the habit of the bodie. Wherfore then it is not ſufficient that the Phyſician employ himſelf in the cure of the Gout, but it behoov's him much more to attend the cure of the fever, which if it bee continual, it diſcredit's the Phyſician, and endanger's the patient; if it bee intermitting, it eaſily becom's continual, unleſs it bee withſtood with fit remedies, that is, unleſs you let blood, the bellie beeing firſt gently purged, and nature bee preſently free'd by a ſtronger purge

The ſcopes of cureing.

Repercuſſives not to bee uſed in the *Sciatica*.

The palliative cure performed by four ſcopes.

An argument taken from that which helpeth or giveth eaſ, is not alwaies certain.

How cold diſeaſes may bee helped by cold. and hot, by hot medicines.

The firſt thing that may deceiv a Phyſician.

The ſecond.

The third.

The fourth.

The fifth.

The ſixth.

Why ſtrong purges muſt be given to ſuch as have the Gout.

purge of the troubleſom burden of humors. Now it is convenient, the purge bee ſomwhat ſtronger then ordinarie, for if it ſhould bee too weak, it will ſtir up the humors, but not carrie them away, and they thus agitated will fall into the pained and weak joints, and cauſe the Gout to encreaſ, By this it appear's how deceitful that conjecture is,, which relie's and is grounded on one ſign, as often as wee muſt pronounce judgment of morbifick cauſes.

That judgment moſt certain which reſt's upon multiplicitie of ſigns.

Wherfore to conclude, wee muſt think that opinion moſt certain concerning the matter of the diſeaſ, which is ſtrengthened with multiplicitie of ſigns, as thoſe which are drawn from the color of the part, the heat or coldneſs manifeſt to the touch, thoſe things that help and hurt, the patient's familiar and uſual diet, temper, age, region, ſeaſon of the yeer, proprietie of pain, the exacerbation or exceſs thereof, in what daies, and in what hours of the daie, the length of theſe fits, the urine and other excrements coming from the patient's bodie. But for that not a few are in that hereſie, that they think that wee muſt neither purge nor let blood in the Gout, weee muſt heer convince that opinion. For ſeeing that phyſick is the addition of that which want's, and the takeing of thoſe things that are ſuperfluous, and the Gout is a diſeaſ which hath its eſſence from the plentie of abounding humors, certainly, without the evacuation of them by purgeing and bleeding, wee cannot hope to cure, either it, or the pain which accompanie's it. *Metrius*, in his Treatiſe of the Gout write's, that it muſt bee cured by purgeing, uſed not onely in the declination, but alſo in the height of the diſeaſ, which wee have found true by experience; and it is conſonant to this ſaying of *Hippocrates*; in pains wee muſt purge by the ſtool. Beſides alſo, *Galen* profeſſeth that in great inflammations, fevers and pains, hee knew no greater nor ſurer remedie then to let blood, even to the fainting of the patient. If thoſe which are in this caſe ſhall not becom better by purgeing and phlebotomie conveniently preſcribed, then it happen's by the means of drunkenneſs, gluttonie, and the like diſtemper. For hence abundance of crude humors are heaped up, which by thir contumacie yeeld themſelvs leſs obedient to medicines. Therefore ſuch goutie perſons as are intemperate and giv'n to gluttonie and venerie, may hope for no health by uſe of medicines.

Why wee muſt uſe purgeing and bleeding in the Gout.

*Lib. de affect. ubi de Arthrit loquitur.*

*Adaph. 23. ſect. 1.*

*Lib. de cur. per ſang. miſſionem.*

## CHAP. XV.

*Of local medicines which may bee uſed to a cold Gout.*

It is not ſafe to uſe repercuſſives in the Gout before purgeing.

Little do topick medicines avail, unleſs the bodie of the goutie patient ſhall bee purged from excrementitious humors; beſides alſo there is danger leaſt by the uſe of repelling medicines, the virulencie of the humor may bee driv'n into the entrails, which thing hath been the cauſ of ſudden death to manie. Now in the firſt place wee will ſpeak of local medicines which are thought meet for a phlegmatick juice, becauſ this is more frequent, then that which is from a hot cauſ. At the begining in everie gout, the *Sciatica* excepted, wee muſt uſe aſtringent things which have a facultie to binde or ſtrengthen the joints, and to drie and waſte the excrementitious humor.

An aſtringent Cataplaſm.

As, ℞. *fol. ſabinæ* m.ß. *nucum cupreſſi* ℥iii. *aluminis roch.* ℥i. *gum. tragacanthæ* ℥iiii. *mucaginis pſilii & cydon. quantum ſufficit, fiat cataplaſma.* Or, ℞. *ſtercoris bubuli recentis* ℔. i. *mellis roſ.* ℥iiii. *olei roſ. & aceti an.* ℥ii. *bulliant ſimul parùm, fiat cataplaſma.* Or elſ, ℞. *olei roſar. & myrtill. an.* ℥ii. *pulveris myrrhæ & aloës an.* ℥i. *acaciæ* ℥ii.ß. *incorporentur cum aquâ gallarum coctarum, & fiat unguentum.* Som boil ſage, camomile and melilote flowers, wormwood and dane-wort, of each a handful in a ſufficient quantitie of vineger, then they put the grieved part into this decoction beeing warm; and by frequent uſeing this medicine, it hath been found to repel and conſume the noxious humor, not onely cold, but alſo cholerick; and alſo to ſtrengthen the part. The freſh *fæces* of Olives laid to the part, aſſwage pain: dried Oranges boiled in vineger, beaten and applied, do the ſame. Or, ℞. *medii corticis ulmi* ℔.ß. *caudæ equin. ſtæchad. conſolid. majoris, an.* m.ß. *aluminis roch. thuris an.* ℥iii. *farin. hordei* ℥v. *lixivii com. quantum ſufficit, fiat cataplaſma ad formam pultis ſatis liquidæ.* Commonly then when as the part ſwelleth up, the pain is leſſned, for that the expulſive facultie driveth the humor from the center into the circumference of the part, that is, from within outward; for in like ſort, ſuch as have the tooth-ache have leſs pain when their cheeks begin to ſwell.

A diſcuſſing fomentation.

One, partly aſtringent and partly diſcuſſing.

After repercuſſives, wee muſt com to thoſe which evacuate the conteined humor by evacuateing or reſolving it. For everie defluxion of humors remaining in anie part require's evacuation. Neither muſt wee marvel thereat, if the digeſted humor doth not vaniſh at the firſt time; for wee muſt have regard to the cold phlegm which is thick and viſcid, as alſo of the part which is ligamentous, membranous and nervous, and conſequently more denſ then fleſhie parts. ℞. *rad. Bryon. ſigilli beat. Mariæ. an.* ℥iv. *bulliant in lixivio, poſtea terantur, & colentur per ſetaceum, addendo farin. hordei & fabarum an.* ℥i. *olei chamæm.* ℥iii. *fiat cataplaſma.* Or, ℞. *hordei & lupin. ag.* ℥iii. *ſulphuris vivi & ſalis com. an.* ℥i. *mellis com.* ℥v. *pul aloës & myrrhæ an.* ℥ß. *aq. vit.* ℥i. *cum lixivio, fiat cataplaſma.* Or, ℞. *ſucci calium rub. aceti boni, an.* ℥iiii. *farin. hordei* ℥iß. *pul. Hermodactyl.* ℥ß. *vitellos ovorum* nu. iii. *olei chamæm.* ℥iii. *croci* ℈ii, ſom burn the roots and ſtalks of Coleworts, and mix the aſhes with hog's greaſ and the powder of Orris, and

Why the goutie humor doth not preſently vaniſh upon the uſe of repercuſſives.

Greater diſcuſſes

ſo

ſo make a pultis. Or, ℞. *Lactis vaccini* ℔.ii. *micæ panis albi quantum ſufficit, bulliant ſimul, addendo pulveris ſubtilis florum chamæm. & meliloti an.* m.ſ. *croci* ℈i. *vitellos ovorum* nu. iiii. *ol. roſ.* ℥iii. *butyri recentis* ℥i. *terebinth.* ℥ii. *fiat cataplaſma ad formam pultis ſatis liquidæ.* This Cataplaſm may bee applied with good ſucceſs, not onely to phlegmatick and cold, but alſo to anie gout, at anie time to mitigate the extremitie of the pain in men of anie temper, and it muſt bee changed twice or thrice a daie. Alſo Triacle diſſolved in wine, and anointed on the part, is ſaid to aſſwage this pain. You may for the ſame purpoſe make and applie emplaſterrs, unguents, cerats and liniments: This may bee the form of an emplaſter. ℞. *gummi ammoniaci, bdelii, ſtyracis, an.* ℥ii. *cum aceto & aquâ vit. diſſolve & adde farin. fænugr.* ℥ſ. *olei chamæm. & aneth. an* ℥ii. *ceræ quantum ſufficit, fiat empaſtrum molle.* Or, ℞. *rad. bryon. ſigill. beat Mariæ. an.* ℥v. *bulliant in lixivio completè, & colentur per ſetaceum, addendo olei cham.* ℥iiii. *ſevi hircini* ℥iiii. *ceræ nov. quantum ſufficit, fiat emplaſtrum molle.* Or, ℞. *gum. ammon. opopanacis galbani. an.* ℥ii. *diſſolvantur in aceto, poſtea colentur, adde olei liliorum, terebinth. venet. an,* ℥i. *picis navalis, & cer. nov. quantum ſufficit, fiat emplaſtrum molle.* Or elſ, ℞. *ſucci rad. enul. camp. & ebuli an.* ℥iii. *rad. alth.* ℔. ſ. *coquantur & colentur per petaceum, addendo florum cham. melil. ſambuchi, roriſmar. & hyperici an* p. ii. *nucum cupreſſi,* nu. iiii. *ol. cham. aneth. hyper. liliorum, de ſpicâ an.* ℥ii. *pinguedinis anatis, gallin. anſeris an.* ℥ſ. *ranas viridas vivas* nu.vi. *catellos duos nuper natos, bulliant omnia ſimul, in* ℔. ii. ſ. *vini oderiferi & unâ aquæ vit. ad conſumptionem ſuccorum & vini, & oſſium catellorum diſſolutionem, & fortiter exprimantur; & expreſſionis adde terebinth.* ℥iii. *cer. quantum ſufficit, fia emplaſtrum molle.* Alſo, *Emp. de vigo. Oxicroceum, de mucilaginibus, de meliloto* and the like mixed together, and ſoftned with a little oil or *axungia*, are of the like facultie, and good for the ſame purpoſe.

A cataplaſm good for anie Gout at anie time.

Diſcuſſing emplaſters.

Let this bee the form of an ointment. ℞. *anſerem pinguem, & imple catellis duobus, de quibus deme cutem, viſcera, caput & pedes; item accipe ranas* nu. x. *colubros detracta cute in fruſtra diſſectos* nu. iv. *mithridat. & theriac. an.* ℥ſ. *fol. ſalviæ, roriſmar. thymi, rutæ, an.* m. ſ. *baccarum lauri, & juniperi, conquaſſat. an.* ℥i. *pulveris nuc. moſchat. zinzib. caryophyl. & piper. an.* ℥i. *de eo quod ſtillabat fiat unguentum vel linimentum cum cerâ & terebinth. venetâ, paucâ aquâ vitæ additâ*; this marvelouſly aſſwageth the pain of the Gout ariſeing from a cold cauſ. Another, ℞. *gummi pini, & lodani, an.* ℥iv. *gummi elemi & piſcis naval. an.* ℥ſ. *terebinth. venet. claræ* ℥vi. *chamæm. & liliorum an.* ℥vi. *vini rub.* ℔. i. ſ. *aq. vit. & ſalv. an.* ℥vi. *diſſolvantur omnia ſimul lento igne, baculo ſemper agitando, deinde adde pul. ireos. flor. baccarum lauri et hermodactyl. an.* ℥iiſ. *maſtiches, myrrhæ et olibani an.* ℥ii. *farinæ fabar.* ℥iv. *incorporentur omnia ſimul, fiat unguentm molle.* Or elſ, ℞. *mucag. ſeminis fænugr. in aceto extract. quantum volueris, cui miſce mellis quantum ſufficit*; let them bee boiled together until they acquire the conſiſtence of an ointment. Theſe things ſhall bee changed, as often as need ſhall ſeem to require. Alſo an anodine and diſcuſſing fomentations are good to reſolv; as this, ℞. *fol. rutæ, ſalv. roriſmar. an.* m.i. *bulliant cum aceto & vino*; and ſo make a decoction for a fomentation, which you may uſe not onely in a cold Gout, but alſo in a hot, becauſ it reſolveth and ſtrengtheneth the part by aſtriction, and free'th it from the defluxion: you muſt have a care that the medicines which are uſed to pains of the Gout bee changed now and then. For in this kinde of diſeaſ that remedie which did good a little before, and now availeth, will in a ſhort time becom hurtful.

Ointments.

Diſcuſſing fomentations.

Remedies muſt bee often changedin the gout.

But if the contumacie and exeſs of the pain bee ſo great, that it will not yeeld to the deſcribed medicines; then it is fit, becauſ the diſeaſ is extreme, to uſe (according to *Hippocrates*'s counſel) extreme, ſuch as are thoſe which follow. ℞. *axungiæ gallinæ, olei laurini maſtic. & euphorb. an.* ℥i. *pulv. euphorb. & pyreth an.* ℥i. *fiat litus*; herewith let the part bee rubbed everie daie, for it is a verie effectual medicine. For *euphorbium* and Pellitorie by their heat attenuate and reſolv, the capon's greaſ and oil of baies relax, the oil of maſtich ſtrengtheneth the part and hindereth a new defluxion. Alſo there is made a verie anodine ointment of oil of Foxes, wheerin earth-worms, the roots of elecampane and bryonie have been boiled, with a little turpentine and wax; this ſoften's, attenuate's and reſolv's the cold humor impact in the joints. Or elſ ℞. *ſeminis ſinapi pulviſerati, & aceto acerrimo diſſoluti,* ℥iii. *mellis anacardani* ℥ii. *aquæ vitæ* ℥i. *ſalis com.* ℥ii. let them bee all mixed together, and applied to the pained part. Or, ℞. *picis nigræ,* ℥iii. *terebinth. venetæ* ℥i i. *ſulphuris vivi ſubtiliter pulveriſati* ℥iii. *olei quantum ſufficit, liquefiant ſimul, fiat emplaſtrum*; let it bee ſpread upon lether, and laid upon the part for two or three daie's ſpace, if the patient perceiv anie eaſ therby; if otherwiſe, let it bee changed as wee ſaid before. Som for the ſame purpoſe applie nettles therto, and preſently after waſh the part in the ſea or ſalt water. Others foment the part with vineger wherin pigeons hath been boiled. A veſicatorie made of verie ſower leaven, *cantharides*, and a little *aqua vitæ* is verie powerful to evcauate the conjunct matter. For thus the malign and virulent *ſerum*, or whayiſh humor is let out, whence follow's ſom eaſ of the pain. Now there are ſom goutie pains, which cannot bee leſſned or aſſwaged unleſs by remedies more powerful then the diſtemper, therfore veſicatories ought not to bee rejected, ſeeing that the Ancients in this affect have alſo made uſe of actual cauteries, as wee ſhall ſhew heerafter. *Chriſtopher Andreas* in his book termed *Oëcoitarie* [that is, domeſtick phyſick] much commend's Ox-dung wrapped in cabbage or vine-leavs, and roaſted in the embers, and ſo applied hot too the grieved part.

A great diſcuſſer.

An anodine.

A veſicatorie againſt the contumacie of the conjunct matter.

CHAP.

## CHAP. XVI.

*Of local medicines to bee applied to hot or ſanguin Gout.*

What repercuſſives are here required.

Here muſt wee in the begining make uſe of repercuſſives, ſuch as are cold and dric, that they may contend with the morbifick matter by both their qualities; alſo let them bee aſtrictive, ſo to add ſtrength to the part. But I would have you alwaies to underſtand that you muſt firſt premiſe general medicines. ℞. *albuminum ovorum* nu. iv. *ſucci lactucæ & ſolani an.* ℥i. *aq. roſar.* ℥ii. *incorporentur ſimul, & fiat linimentum ſæpius renovandum.* Others take the meal of barlie, lentils, *acatia*, oil of roſes, myrtles, and with a little vineger they make a cataplaſm; Or, ℞. *ſumach. myrtillorum, boli arm. an.* ʒß. *acatiæ, corticum granat. baluſt. an.* ʒi. *aq. plantag. & roſar. an.* ℥iii. *ol. roſati* ℥iß. *aceti* ℥ii. *farinæ hordei & lentium quantum ſatis erit, fiat cataplaſma.* This is verie excellent and effectual to ſtay or hinder phlegmonous and eriſipelatous tumors. Alſo you may make a cataplaſm *ex mucagine Cydoniorum in aquâ roſarum extractâ, caſiæ fiſtulâ, oleo roſato, & aceto:* Or, ℞. *pampinorum vitis viridum*, m.ii, *terantur & bulliant in oxycrato ex aquâ fabrorum, cui adde ſumach. conquaſſat.* ℥i. *olei roſat.* ℥ii. *farinæ hordei quantum ſufficit,* An excellent aſtringent cataplaſm. *fiat cataplaſma.* Or elſ, ℞. *ſucci ſempervivi, hyoſcyami, portulacæ an.* ℥iv. *corticum mali granati* ℥iß. *farinæ hordei* ℥v. *vini auſteri quantum ſufficit, fiat cataplaſma*; this is much commended, for it hath entring thereinto wine and the pomgranate pill, which both are verie great aſtrictives; and the juices are exceeding cooling, the meal alſo hinder's and thicken's the ſanguin humors that are readie to flow down, and make the medicine of a good conſiſtence. Another: ℞. *fol. hyoſcyami & acetoſæ an.* m.i. *involvantur papyro, & ſub cineribus coquantur, mox cum unguento populeon. aut roſat.* ℥ii. *incorporentur*; and then lay this Cataplaſm thus made warm unto the part. Another: ℞. *florum hyoſciami* ℔.ii. *ponantur in phialâ vitreatâ, & reconde in fimo equino donec putruerint, accipe ex putredine* ℥ii. *in quibus diſſolve olei de junipero* ℥ß. *fiat linimentum ad uſum.* Others beat pulp of a Gourd or Citrul in a mortar, and ſo applie it. Another: ℞. *mucag. ſem. pſilii, & cyton. exteact. in aq. roſar. & ſolani an.* ℥iiii. *olei roſati omphacini* ℥iii. *vini granat.* ℥i. *vitellos ovo. cum albumine* nu. iii. *camphoræ* ʒi. *encorporentur ſimul, fiat linimentum.* Or elſ, ℞. *ol. roſat. omphacini* ℥iv. *album. ovorum cum vitellis* nu.vi. *ſucci plantag. et ſolani an.* ℥i. *farinæ hordei* ℥iii. *incorporentur ſimul, fiat cataplaſma.* Or, ℞. *farinæ fabarum et hordei an,* ℥iii. *olei roſati,* ℥ii· *oxycrati quantum ſufficit, coquantur ſimul, fiat cataplaſma.* Another; ℞. *mucag. ſem. pſilii* ℥iiii. *ol. roſati* ℥ii. *acet* ℥i *vitellos ovorum*, nu. iii. *croci* ℈i. *miſce. Plinie* report-

*Lib.22.cap.25.* eth that *Sextus Pomponius* the Governor of the hither-Spain, as hee overlooked the winowing of his corn, was taken by the pain of the Gout in his feet, wherfore hee cover'd himſelf with the Wheat above his knees, and ſo was eaſed, his feet beeing wonderfully dried; and hee afterwards uſed this kinde of remedie. It is note-worthie, which often happeneth,

Phlebotomie to evacuate the conjunct matter, and aſſwage pain. that the pain cannot bee altogether eaſed by ſuch remedies, by reaſon of the abundance of blood impact in the part; wherefore it muſt bee evacuated: which I have don in manie with good ſucceſs, opening the vein which was moſt ſwelled and nigh to the affected part; for the pain was preſently aſſwaged. Neither muſt wee too long make uſe of repercuſſives; leaſt the matter becom ſo hardned, that it can ſcarce bee afterwards reſolved, as when it ſhall bee concrete into knots and plaſter-like ſtones: reſolving medicines are to bee mixed with repercuſſives conveniently applied, ſo to diſcuſs the humor remaining as yet in the part, whereof ſhall bee ſpoken in the following Chapter.

## CHAP. XVII.

*Of local medicines for a cholerick Gout.*

What repercuſſives are heer required.

He repercuſſives that muſt firſt bee uſed in this kinde of Gout ought to bee cold and moiſt, that ſo they may reſiſt both the qualities of choler; ſuch are the leavs of night-ſhade, purſlain, houſ-leek, henbane, ſorrel, plantain, poppie, cold water and the like, whereof may bee made diverſ compoſitions. As, ℞. *ſucci hyoſcyami, ſempervivi. lactuc. an.* ℥ii. *farin. hordei* ʒi. *olei roſati* ℥ii. *agitando ſimul fiat medicamentum*; let it bee applied and often changed, for ſo at length it will aſſwage the inflammation. Som think the brain of a hog mixed with white ſtarch, of barlie-meal and oil of roſes, an excellent medicine. The leavs of mallows boiled in water, and beaten with a peſtil, and applied, aſſwage pain. ℞. *mucag. ſem. pſilii extract. in aq. ſolani, vel roſarum* ℥ii. *farin. hordei* ʒi. *aceti q. ſ. fiat linimentum.* Or elſ, ℞. *unguent. roſat. meſnæ, & populei an* ℥iii. *ſucci melonum* ℥ii. *alb. ovorum*, nu.iii. *miſceantur ſimul pro litu.* Alſo a ſponge dipped in oxycrate, and preſſed out again and applied thereto doth the ſame. Or elſ, ℞. *fol, caulium rub.* m. ii. *coquantur in oxycrato & terantur: adde ovorum vitellos tres, olei roſati* ℥iii. *farinæ hordei quantum ſufficit, fingatur cataplaſma.* Alſo you may take the crude juice of cole-worts, dane-weed, and roſes beaten and preſſed out, and of theſe incorporated with oil of roſes and barlie-meal make a cataplaſm. In winter-time, when as theſe things cannot bee had green, you may uſe

*unguent.*

*unguentum infrigidans Galeni & populeon.* Or elſ, Rx. *ceræ albæ* ℥i. *croci* ℈i. *opii* ℈iiii. *olei roſati quantum ſufficit, marcerentur opium & crocus in aceto, deinde terantur et incorporentur cum cerâ et oleo, fiat ceratum*; ſpread it upon a cloth, and lay it upon the part, and all about it, and let it bee often renewed. Som cut Frogs open and applie them to the grieved part. It is confirmed by ſundrie men's experience, that pain of the *Sciatica*, when it would yeeld to no other remedie, to have been aſſwaged by anointing the affected with the mucous water or gellie of Snails, beeing uſed for the ſpace of ſeven or eight daies; the truth whereof was aſſured mee by the worthie Gentleman the Lord of *Longemau*, a man of great honeſtie and credit, who himſelf was troubled for ſix month's ſpace with the *Sciatica*. This water is thus made, Take fiftie or ſixtie red Snails, put them in a copper-pot or kettle, and ſprinkle them over with common ſalt, and keep them ſo for the ſpace of a daie; then preſs them in a courſ or hair-cloth; in the expreſſed liquor dip linnen rags and applie them ſo dipped to the part affected, and renew them often. But if there bee great inflammation, the Snails ſhall bee boiled in Vineger and Roſe-water. They ſay that Citrons or Oranges boiled in Vineger, and beaten in a mortar, and incorporated with a little barlie or bean flower, are good againſt theſe pains. Or elſ, Rx. *pomorum cotiorum in lacte* ℔i. *butyri* ℥i. *vitellos ovorum*, nu. ii. *aceti* ℥i. *fiat cataplaſma*. There are ſom who take cheeſ-curd newly made, and mix it in a mortar with oil of Roſes and barlie-meal, and ſo applie it; it repreſſeth inflammation and aſſwageth pain. Others mix *caſſia* newly extracted forth of the cane, with the juice of Gourds or Melons. Others applie to the part the leavs of Colewort, and Dane-weed or ſmallage, or all three mixed together and beaten with a little Vineger. Others macerate or ſteep an ounce of linſeed in Wurt, and make the mucilage extracted therefrom into a Cataplaſm with ſom oil of Roſes and barlie-meal. Som put oil of poppies to the pulp of Citrulls or Gourds beeing beaten, and ſo incorporate them together, and applie it.

A cerate with opium.

The water of Snails.

This following medicine hath its credit from a certain Gaſcoin of Baſas that was throughly cured therewith, when as hee had been vexed long and much with goutie pains, above the common cuſtom of ſuch as are troubled with that diſeaſ. Thus it is; Take a great ridg-tile thick and ſtrong, and heat it red hot in the fire, then put it into ſuch another tile of the ſame bigneſs, but cold, leaſt it ſhould burn the bed-clothes, then forthwith fill the hot one with ſo manie Dane-wurt-leavs, that the patient may ſafely lay the affected part therein without anie danger of burning it. Then let the patient endure the heat that com's therefrom, and by ſweat receiv the fruit thereof, for the ſpace of an hour, ſubſtituteing freſh Dane-wurt-leavs, if the former becom too drie, as alſo another hot tile, if the former ſhall grow too cold before the hour bee ended. This beeing don, let the part bee dried with warm and drie linnen clothes. Uſe this particular ſtove for the ſpace of fifteen daies, and that in the morning faſting; afterward annoint the part with this following ointment. Rx. *ſucci ebuli* ℔i. ſ. ℥ß. *olei com.* ℔i. *miſceantur ſimul*, and let them bee put into a ſtrait mouthed glaſs, and well luted up; then let it boil in *balneo Mariæ*, beeing firſt mixed with ſom wine, untill the half thereof bee conſumed, for the ſpace of ten or twelv hours, then let it cool, and ſo keep for uſe, adding thereto in the time of anointing, ſom few drops of *aqua vitæ*. It may bee anointed twice or thrice in a daie, long after meat. Moreover, the roots and leavs of Dane-wurt boiled in water, beaten and applied aſſwage pain; the oil thereof chimically extracted perform's the ſame.

An hiſtorie.

A particular ſtove.

An ointment of the juice of Dane-wurt.

But if the contumacious pain cannot bee mitigated by the deſcribed remedies, and becoming intolerably hot and rageing, make the patient almoſt to ſwoun, then muſt wee flie to Narcoticks. For although the temper of the part may bee weakned by theſe, the native heat diminiſhed or rather extinguiſhed; yet this is a far leſs inconvenience then to let the whole bodie bee waſted by pain. Theſe things have a powerful refrigerateing and drying facultie, takeing away the ſenſ of the pain, and furthermore, incraſſate, thin acrid and biteing humors, ſuch as cholerick humors are. Wherefore if the matter which cauſſeth the pain bee thick, wee muſt abſtain from Narcoticks, or certainly uſe them with great caution. Rx. *micæ panis ſecalini ſarion coctii in lacte*, ℥ii. *vitellos ovorum*, en. ii. *opii*. ℥i. *ſuccorum ſalani, hyoſcyami, mandragoræ, portulacæ, ſempervivi, an.* ℥i. let them bee mixed together and applied, and often changed. Or elſ, Rx. *fol. hyoſcyami cicutæ, acetoſ. an.* m. i. *bulliant in oxycrato & contundantur, cumque vitellis ovorum crudorum* nu. ii. *& olei roſat.* ℥ii. *farin. hordei quod ſatis ſit, incorporentur, fiat cataplaſma*; with the uſe thereof I am accuſtomed to aſſwage great pains. Or elſ, Rx. *opii* ℥iii. *camphor.* ℥ß. *olet nenuph.* ℥i. *lactis* ℥ii. *unguent. roſ. Galeni* ℥iv. *incorporentur ſimul in mortario, applicentur*. Moreover, cold water applied and dropped upon the part drop by drop, is narcotick and ſtupefactive, as *Hippocrates* affirmeth, *Aphor. 29. Sect. 5.* for a moderate numneſs mitigateth pain. There is alſo another reaſon why it may bee profitably uſed in all pains of the Gout, for that by repelling the humors, it hindereth their defluxion into the part. Mandrag-apples boiled in milk, and beaten, do the ſame thing; alſo the leavs of henbane, hemlock, lettuce, purſlain, beeing ſo boiled, do the ſame. If anie deſire to uſe theſe more cold, hee muſt applie them crude, and not boiled.

A cataplaſm with opium.

When to uſe narcoticks.

But the exceſs of pain beeing mitigated, wee muſt deſiſt from the uſe of ſuch narcoticks, and they muſt rather bee ſtrengthened with hot and digerateing things; otherwiſe there will

How to amend the harm don by Narcoticks.

will bee danger leſt it bee too much weakned, the temper thereof beeing deſtroied, and ſo afterwards it may bee ſubject to everie kinde of defluxion. Wherefore it ſhall bee ſtrengthened with the formerly diſcuſſing fomentations, and theſe enſuing remedies. As, ℞. *gum. ammoniaci & bdelii an,* ℥i. *diſſolvantur in aceto, & paſſentur per ſetaceum, addendo ſtyracis liquid. & farin. fœnugr. an.* ℥ß. *pulv. ireos* ℥iiii. *olei chamæm.* ℥ii. *pulveris pyrethri* ℥ii. *cum cerâ, fiat emplaſtrum molle.* Or, elſe, ℞. *rad. emulæ, ebuli altheæ an.* ℔ß. *ſem. lini, fœnugr. an.* ℥ii. *ficuum ping.* nu. xx. *coquantur completè & trajiciantur per ſetaceum, addendo pul. euphorb.* ℥ii. *olei chamæm. aneth. & rutacei, an.* ℥iii. *medullæ cervi* ℥iv. *fiat cataplaſma.* Yet you muſt uſe moderation in diſcuſſing, leſt the ſubtler part of the impact humor beeing diſcuſſed, the groſſer part may turn into a ſtonie conſiſtence, which alſo is to bee feared in uſeing repercuſſives.

Diſcuſſers.

A mean to bee uſed in diſcuſſing.

Bathes aſſwage the pain of the Gout.

I alſo omitted, that according to the opinion of the Antients, bathes of freſh water, wherein cooling herbs have been boiled, uſed three hours after meat, conduce much to the aſſwageing of pain; for ſo uſed, they are more convenient in cholerick natures, and ſpare bodies, for that they humect the more, and quickly digeſt the thin and cholerick, and conſequently acrid vapors, the pores beeing opened, and the humors diſſipated by the gentle warmneſs of the bath. After the bath, the bodie muſt bee anointed with *hydrælium*, or oil and water tempered together, leſt the native heat exhale and the bodie becom more weak. Meats of more groſs juice are more convenient, as beef, ſheeps-feet, and the like, if ſo bee that the patient can digeſt them, for theſe inſpiſſate the cholerick blood, and make it more unfit for defluxion.

How meats of groſs juice are profitable.

## CHAP. XVIII.

*What remedies muſt bee uſed in pains of the joints proceeeding of a diſtemper onely, without matter.*

An hiſtorie.

PAins alſo happen in the joints by diſtemper without anie matter, which though rare, yet becauſ I happened once to feel them, I have thought good to ſhew what remedies I uſed againſt them. I once earneſtly buſied in ſtudie, and therefore not ſenſible of ſuch external injuries as might befall mee; a little winde coming ſecretly in by the crannies of my ſtudie, fell upon my left Hip; at length wearied with ſtudie, aſſoon as I roſe up to go my way, I could not ſtand upon my feet, I felt ſuch bitter pain without anie ſwelling or humor which might bee diſcerned. Therefore I was forced to go to bed, and calling to minde, that cold, which was abſolutely hurtful to the nervs, had bred mee that pain, I attempted to drive it away by the frequent application of verie hot clothes; which, though they ſcorched and bliſtered the ſound parts adjoining thereto, yet did they ſcarce make anie impreſſion upon the part where the pain was ſettled, the diſtemper was ſo great, and ſo firmly fixed therein. And I laied thereto bags filled with fried oats and millet, and dipped in hot red wine; as alſo ox-bladders half filled with a decoction of hot herbs. And laſtly, a wooden diſh almoſt filled with hot aſhes, covered over with ſage, roſmarie and rue lightly bruiſed, and ſo covered with a cloth, which, ſprinkled over with *aqua vitæ*, ſent forth a vapor which aſſwaged the pain. Alſo brown bread newly drawn out of the oven, and ſprinkled over with roſe-water, and applied, did verie much good. And that I might more fully expel this hurtful cold, I put ſtone-bottles filled with hot water, to the ſoals of my feet, that the brain might bee heated by the ſtraightneſs and continuitie of the nervs. At length, by the help of theſe remedies, I was verie well free'd from this contumacious diſtemper, when it had held mee for the ſpace of four and twentie hours.

*Hip. ap.* 10. *ſect.*

Divers remedies for pain ariſeing from a cold diſtemper without matter.

A fuliginous vapor ſomtimes the cauſ of the Gout.

There is another kinde of Goutie pain ſomtimes cauſed by a certain excrementitious matter, but ſo thin and ſubtle that it cannot bee diſcerned by the eies. It is a certain fuliginous or ſootie vapor, like to that which paſſeth from burning candles or lamps, which adhere's and concrete's to anie thing that is oppoſed thereto; which beeing infected by the mixture of a virulent ſerous humor whitherſoever it runneth, cauſeth extreme pain, ſomwhiles in theſe, and otherwhiles in other joints, unleſs you make a way therefore, when as it ſeeketh paſſage forth, wich muſt bee don by horns, cupping-glaſſes, veſicatories, cauteries, or other the like art.

## CHAP. XIX.

*What is to bee don after the fit of Gout is over.*

How to ſtrengthen the joints.

IT is convenient when the pain is aſſwag'd, that you ſtrengthen the joints. Now, to ſtrengthen them is not onely to binde and drie, but wholly to amend the weakneſs left in the part by the diſeaſ, that is to diſcuſs the humor, if anie ſuperfluitie thereof remain; but to humect the part, if the moiſture bee exhauſted and dried up. But ſuch as are troubled with the gout, after they are free'd from their pain, have notwithſtanding ſuch impotencie of their joints that they cannot go of a long time after; for that the nervs and

Remedies for the weakneſs left in the joints after the pain is gon.

tendons

tendons which are in great number in the feet, beeing moiſtned with much phlegm, are ſo relaxed, that they can no more ſuſtain or bear themſelvs upon their feet, then paper when it is wet can bee made to ſtand. Wherefore, that they may recover the uſe of their feet, the impacted humor muſt by all means bee diſcuſſed, and ſpent with fomentations, cataplaſms, drying and aſtringent emplaſters. You may uſe the formerly deſcribed fomentation, encreaſing the quaintitie of alum and ſalt, and adding thereto a like quantitie of *ſulphur vivum*: then the following emplaſter ſhall bee applied thereto. ℞.*maſ. emplaſt. contra rupturam* ʒiiii. *tereb.*ʒii. *pulv.roſ.rub. nucum cupreſſ.gallarum, gran myrtil.& fol.ejuſdem, thuris, maſtich. & caryophyl.an.*ʒi. *malaxentur omnia ſimul, manibus inunctis oleo myrtino & maſtichino, fiat emplaſtrum.* Let it bee ſpread upon leather to a juſt bigneſs, and applied to the top and ſole of the foot. Draw over the plaſter, and the whole leg a ſtocking made of a tanned-dog's-skin; this emplaſter ſtrengtheneth the nervs, draweth forth the humor impact therein, and intercept's the defluxion. But the dog-skin-ſtocking preſerveth the native heat of the part, and for that it bindeth, hindreth the defluxion into the feet.

The benefit of a dog-skin ſtocking.

## CHAP. XX.

*Of the* Tophi, *or knots which grow at the joints of ſuch as are troubled with the Gout.*

SOm that are troubled with the Gout, have knottie bunches growing in their joints, which by the antients were called *Tophi*. Theſe are generated by the congeſtion of groſs, viſcid and crude phlegm, with a little admixtion of an acrid and cholerick humor. Theſe matters remain ſettled in the part, for that it beeing too weak cannot digeſt and depreſs them; wherefore beeing there impact, they eaſily concrete into a certain plaſter-like or chalk-like ſubſtance, whileſt by the adventitious and burning heat cauſſed by pain, and the goutie malignitie, their more ſubtle part is diſperſed, but the groſſer ſubſide's. Yet ſomtimes the unfit application of repercuſſive or diſcuſſive medicines is a cauſ of the generation of theſe *Tophi*. For by the former, the impact matter is incraſſated and gathered together; but by the later, the ſubtle part beeing diſcuſſed, the remnant that ſubſide's, concrete's into *Tophi*. Thoſe medicines which are made to mollifie, ought to have a moderately heating, and humecting facultie, that they may diffuſe, and as it were diſſolv the impact matter; ſuch is warm water, the decoction of emollient herbs, the decoction of calv's or ſheep's entrails, heads and feet: after theſe or the like fomentations, you ſhall uſe the following medicine. ℞.*axungiæ, human. anſeris & gallinæ, medul.cervin. an.* ʒii. *tereb.ven.*ʒi. *aq.vitæ parum, ceræ quantum ſufficit, fiat unguentum molle.* Then this which followeth will bee good. ℞.*rad. alth. liliorum, bryon. lapath. acuti, an.*ʒiiii. *coquantur completè, & trajiciantur per ſetaceum; adde gum. ammon. bdel. galb. opopanacis in aceto diſſolutorum* ʒi.*medul.cervin.*ʒiſs. *incorporentur ſimul, & applicentur.* Or elſ, ℞.*olei liliorum, amygd.dul.medullæ cruris cer.an.*ʒiiſs. *mucag.ſem.lini, alth.fœnugr. an.* ʒi. *ceræ quantum ſufficit; fiat ceratum.* Or elſ, ℞.*empl.de vigo cum mercurio, & cerat.de æſipo humidâ deſcript. Philagrii, an.*ʒii. *malaxentur ſimul cum oleo lilior.fiat maſſa.* Or elſ, ℞.*gum.ammon. opopan. galb. bdel. diſſolutorum in aceto, an.*ʒii. *panno lineo colatis, adde pulv. ſulph. nitr. ſinapi, pyrethri, an.*ʒſs. *ſtyracis, liq & axung. hum.an.*ʒi. *reſ.pini, tereb.ven.an.*ʒſs.*ceræ quantum ſufficit, fiat ceratum molle.* This which follow's is thought moſt effectual in the opinion of *Galen* and *Avicen*. ℞.*pedes porcel.bene ſalſos, nu.*iiii.*veterem pernam, cum illis coque: addendo ſub finem, radicis bryoniæ, lapath.acut. an.*ʒiii.*axungiæ tauri, & medul. cervin.an.*ʒi. *cum caſeo putrefacto fiat empl.molle ad uſum.* This which follow's is alſo moſt effectual. ℞.*caſei acris & putrefacti,* ʒiiii. *pulv.ſulph.vivi euphorb.& pyreth.an.* ʒiii. *decoctionis veteris pernæ & porcellorum quod ſufficit ad incorporandum, ducantur in mortario, & fiat empl.ad uſum.* Or elſ, ℞.*ſpumæ nitri,* ʒvi. *tereb.*ʒii. *olei veteris, lixivii, quo lanæ pileorum lavantur, & ceræ quantum ſufficit, fiat ceratum ſatis molle.* After the uſe of emollients, a fumigation ſhall bee made in this manner: Heat a cogle-ſtone, mill-ſtone or brick red hot in the fire, take it forth, and caſt upon it a ſufficient quantitie of verie ſharp vineger, and *aqua vitæ*, the riſing vapor ſhall bee diligently received by the affected member, for this hath a facultie to attenuate and cut groſs, viſcid, and plaſter-like matter, yea alſo, and to break the skin; yet that is broken oftime of its own accord, without the help of either medicine or inſtrument. To conclude, theſe medicines which are good to mollifie ſcirrhous tumors, the ſame are alſo good to ſoften the goutie knots and *tophi*. But wee muſt note, that theſe knottie bunches are ſomtimes ſuppurated, not truly by the impact and plaſter-like matter, but by a new defluxion comming on a ſudden, and then it is neceſſarie to make way for the contained matter, which beeing don, firſt there commeth forth an humor like milk, then a plaſter-like matter, then it leav's behinde it an ulcer to bee cured by applying thereto *empl.gratiâ Dei*, and others as the Surgeon ſhall think fit.

Whence the *Tophi* are generated.

The unfit application of diſcuſſive and repercuſſive medicines cauſe the *Tophi*.

Mollifying medicines.

*Lib.*10.*ſimp. c.*7.*ſe.*22. *lib.*3. *tract.*2.*c.*21.

An effectual fumigation.

## CHAP. XXI.

*Of Flatulencies contained in the joints, and counterfeiting true Gouts, and of the remedies to bee uſed thereto.*

In what joints flatulencies are chiefly generated.

OFtimes there is ſmall quantitie of humor, which move's the pain of the Gout; but much flatulencie mixed therewith, eſpecially in great joints, as in the huckle or hip-bone, and the knees; they ſomtimes cauſ ſo great diſtention, that they drive the heads of the bones forth of their places. You may partly underſtand it is ſo, if a tenſive pain afflict the patient with anie ſenſ of heavineſs; if when you preſs the tumor with your fingers, the place retain no mark or impreſſion thereof, as happen's in an *œdema:* but on the contrarie, a flatulent ſpirit lift's it up as it were by renitencie, as if one ſhould thruſt a pair of bellows, which are filled with winde; hence the part cannot perform its dutie, for that the ſpaces of the joints are poſſeſſed with abundance of flatulencies, ſo that the libertie of motion is intercepted, and the member is kept as it were bound up. Manie no verie skilful Surgeons, putting their fingers to theſe kinde of tumors, ſo that lifting up the one, they preſs down the other, when as they perceive the flatulencie, as it were, riſing between their fingers, ſuppoſing it to bee the motion of *pus*, or matter alreadie generated & flowing up and down, as is uſual in impoſtumes, they have opened it by inciſion; but when as nothing flowed forth, it appeared how much they were deceived, yet in the *interim*, by this their raſhneſs they have cauſſed manie dangerous ſymptoms: as increaſ of pain, defluxion of humors, by force whereof the bones have been diſlocated, and brought to the patient an uncureable lameneſs. But theſe flatulent Gouts are ſeldom without ſom phlegmatick matter, which is neither too crude, nor viſcid. Such like flatulencies are not eaſily diſcuſſed, nor at the firſt endeavor, by reaſon of a cold diſtemper which they bring to the part, and the denſitie of the membranes and ligaments, by which the articulation is knit and faſtened, ſo that ſcarce anie part of that which is there ſhut up can breathe forth of ſuch ſtraight paſſages. Therefore the cure muſt bee undertaken with reſolving, diſcuſſing, and drying fomentations; as for example, with a decoction of fennel, aniſ-ſeeds, rue, chamomil, melilote, ſage, roſemarie, *origanum*, calamints, hore-hound, and the like, boiled in wine with a little lee, roſe-vineger, and common ſalt. This following ointment ſhall bee uſed after the fomentation. ℞. *olei chamœm. aneth. rut. lauri, an.* ℥ii. *cum cerâ albâ, fiat linimentum, addendo aq. vitæ parum.* After you have annointed it, applie thereto this following cataplaſm. ℞. *flor. cham. melil. aneth. roſ. rub. pulv. an.* m. i. *fol malv. & abſinth. an.* m. ß. *furfur,* m i. *bulliant omnia ſimul cum lixivio, & vino rubro, deinde piſtentur cum medullâ panis, & farinâ fabarum, quantum ſufficit, fiat cataplaſma; addendo ol. roſar. & myrtin. an.* ℥ii. Som highly approov of this following medicine for the waſteing of flatulencies. ℞. *axung. ſuil.* ℥iv. *calcis vivæ,* ℥iß. *terantur diligenter in mortario, & incorporata applicentur.* Or elſ, ℞. *ſtercor. caprar. cocti cum vino & aceto, an.* ℞ ß. *tereb. venet. & mel. com. an.* ℥ii. *aq. vitæ,* ℥ß. *pul. rad. Ireos florent. & ſabin. an.* ℥iii. *olei rut, & aneth. an.* ℥i. *farin. fabarum quantum ſufficit.* Make a cataplaſm to the form of a pultis. Alſo ſtoups dipped in oxycrate, and wrung out, ſhall bee applied: in this oxycrate ſhall bee boiled wormwood, *origanum*, chamomil, melilote, rue, common ſalt, adding thereto ſom *aqua vitæ*. Then the part ſhall bee bound up as ſtraight as the patient can endure it; in concluſion, that the native ſtrength may by little and little bee reſtored to the part, it ſhall bee fomented with lee made of the aſhes of oak-wood, and the cuttings of vines, wherein ſhall bee boiled ſalt, ſulphur, choice alum, and wetting linnen-clothes, or ſtoups therein, and applying them, it ſhall bee ſtraightly ſwathed up. Yet if great pain ſhall more cruelly vex the part, then neglecting for a time the proper cure of the diſeaſ, you ſhall withſtand the ſymptom by rubbing the part, and annointing it with ſom diſcuſſing oil, laying thereon ſom moiſt wooll, and other anodyne things.

How flatulencies may make you believ there is *pus*, or matter.

Why hard to cure.

## CHAP. XXII.

*Of the* Iſchias, *Hip-gout, or* Sciatica.

Why it hath the moſt grievous ſymptoms.

EFor that the Hip-gout in the greatneſs of the cauſſes, bitterneſs of pain, and vehemencie of other ſymptoms, eaſily exceed's the other kindes of Gout, therefore I have thought good to treat thereof in particular. The pain of the *Sciatica* is therefore the moſt bitter, and the ſymptoms moſt violent, for that the dearticulation of the huckle-bone, with the head of the thigh-bone, is more deep then the reſt; becauſ alſo the phlegmatick humor which cauſſeth it, is commonly more plenteous, cold, groſs, and viſcid, that flow's down into this joint: and laſtly, becauſ the *Sciatica* commonly ſucceed's ſom other chronical diſeaſ, by reaſon of the tranſlation and falling down thither of the matter, becom malign and corrupt by the long continuance of the former diſeaſ. But the pain not onely trouble's the hip, but entring deep, is extended to the muſcles of the buttocks, the groins, knees, and verie ends of the toes, yea often times it vexeth

The cauſ of the large ſpreading of the pain.

vexeth the patient with a ſenſ of pain in the verie *vertebra* of the loins, ſo that it make's the patients, and alſo oftimes the verie Phyſicians and Surgeons to think it the winde or ſtone-colick. The cauſe of ſuch wandering and diſperſed pain is to bee referred to the manifold diſtribution of the nervs which com to that joint from the loins and *holie-bone*, for they are ſent into the muſcles of the buttocks, and ſo diſperſed over the whole leg to the verie ends of the toes, as it is ſhewed in our Anatomie. Therefore the pain is largely extended, that is, to what part ſoever a nerv run's which com's from the affected hip. Often times there is no ſwelling, no redneſs, nor diſtemper manifeſt to the eie, by reaſon that the veins are verie few which riſe into the ſurface and skin of this part, and the humor lies, as it were, ſunk in; which is the cauſ that diverſ times the excrementitious humors mixed with flatulencie, run ſo violently into the cavitie of this joint, that relaxing the ligaments, as well proper as common, the head of the thigh-bone is eaſily driven out from hence, ſo that it may never bee reſtored again, if it remain ſo for anie ſpace of time; for that in this time the humor falling down into this cavitie, by delaie concrete's as it were into a ſtonie bodie, and the head of the thigh-bone wear's it ſelf another cavitie in the neighboring bone; but the lips of the true cavitie, which are griſtlie, becom more ſtraight and depreſt: and laſtly, all the ligamentous bodies moiſtned with this excrementitious humor becom more looſ and weak, whence ſucceed manie and moſt grievous ſymptoms; as lameneſs, and the decaie not onely of the thigh and leg, but at length of the whole bodie; and laſtly, a ſlow and hectick fever, which in continuance of time will conſume the patient for the cauſſes formerly mentioned. Therefore let Phyſicians and Surgeons have a care that they reſiſt it at the firſt, and, with ſuch powerful remedies as are mentioned in the following Chapter, hinder the ſpringing up and growth of the formerly mentioned ſymptoms.

The thigh-bone often diſlocated by the *Sciatica*.

## CHAP. XXIII.

### *The cure of the* Sciatica.

THough the *Sciatica* bee commonly occaſioned by tough phlegm, yet if the patient bee ſtrong, and abound with blood, and all things elſ conſent, it ſhall bee good to draw blood by opening a vein; for phlebotomie equally evacuate's all humors: therefore the falling down of the humors into the part affected, is thereby hindered or retarded. Verily, I have known no ſpeedier remedie to aſſwage the pain of inflammation, then blood-letting, beeing firſt made on the *Baſilica* of the grieved ſide for revulſion's ſake; and then for evacuation of the conjunct matter on the *vena Iſchiadica*, which is at the out-ſide of the ankle, if the pain of the *Sciatica* bee more on the out-ſide; or elſ on the *Sapheia*, which is on the in-ſide of the ankle, if the inner parts bee more pained. The quantitie of blood which is to bee drawn, muſt bee left to the judgment of the Phyſician, without whoſe advice I would attempt nothing in this caſe. Alſo acrid glyſters are good, if there bee nothing which may hinder; as ulcers of the guts, or hemorrhoids. ℞.*rad.acor.* ℥ii.*centaur.rut, ſalv.roriſm.calam.origan.puleg.an.*m.ß.*ſtæchad.arabic.flo.cham.melil.aneth.an* p.i.*ſem.aniſ. & fœnic.an.* ℥ß. *fiat decoctio ad* ℔i. *in colaturâ diſſolve hieræ & diaphen.an.* ℥ß.*mellis antboſ.ſacc. rub. an.* ℥i. *olei liliorum* ℥iii.*fiat clyſter.* Strong purgations are alſo here uſefull, as of *pillul.fœtid.arthritic. Aſſajereth.de Hermodactylis*, and others uſed in phlegmatick cauſſes. *Electuarium Diacarthami* purgeth choler and phlegm. Often vomitings do not onely evacuate the humors, but alſo make revulſion, as wee have formerly delivered. Baths & ſweats profit no otherwiſe then a decoction of *Guaicum* or *ſarſaparilla*. If heat moleſt the part, then foment it with oil of roſes and vineger, eſpecially if the pain bee deep in, for vineger by its tenuitie pierceth to the bottom, and make's way for the oil, which of its own nature is anodyne. After the uſe of general medicines, you ſhall applie attractive and reſolving things: emplaſters of pitch and ſulphur, or of *ammoniacum, euphorbium, terebinthina, propolis, galbanum, bdelium, Opopanax*, draw the humor from within to the ſurface or skin. As in like ſort alſo the chymical oil of ſage, roſemarie, pellitorie of Spain, and ſuch other like do the ſame, which by reaſon of the tenuitie of their ſubſtance, and their ſeparation from earthie impuritie, have far more powerful and expedite faculties to penetrate and diſcuſs. Yet muſt you uſe none of all theſe without verie good judgment and deliberation, otherwiſe there will bee danger of inflammation.

Why wee muſt open a vein in the *Sciatica*.

When the *vena Iſchiadica* and *Sapheia* muſt bee opened in the *Sciatica*.

Strong purgations in the *Sciatica*.

There may alſo bee made fomentations of diſcuſſing and reſolving herbs, as the roots and leavs of dane-weeds, orris, bay and juniper-berries, the ſeeds of fenugreek, aniſ, fennel, the leavs of ſage, roſemarie, chamomile, melilote, elder, and the like, boiled in wine and oil: the following plaſter is much commended by the antients to digeſt, or reſolv and aſſwage the pain, with this which draw's forth thorns, ſplinters, and rotten bones. ℞.*ſem.urtic. mundat. ſpumæ borac. ſalis ammoniaci, rad.ariſtoloch. rotund. colocynth. terebinth. venet.an.* ℥x. *fœnug. piperis longi, xylobalſam. thur. myrrhæ, adipis cap. gum.pini, an.* ℥v. *ceræ,* ℔ß. *lactis ficus ſylv.* ℥ß. *ex omnibus ſecundùm artem præparatis cum oleo liliorum, & vini generoſi quantitate ſufficiente fiat emplaſtrum.* Let it bee applied to the hip. Or, ℞.*ſinapi acerrimo aceto diſſoluti,* ℥ii. *fermenti*

*acriâ*, ʒß. *pul.hermodact.* ʒii. *mellis com.* ʒiii. *tereb.* ʒiv. *olei laur. & de ſpicâ, an.* ʒii. *far.fœnug.* ʒiß. *terræ formicarum cum ovis*, ℔i. *fol.laur.ſalv.rut. roriſm. an.* m.ß. *vermium.terreſt.præpar.* ℔ß. The earth with the eggs and worms ſhall bee boiled apart with the white wine, and herbs cut in pieces, and theſe beeing ſtrained out, the reſt of the things ſhall bee added according to art, and then it ſhall bee applied to the hip. Or elſe, ℞. *rad.enul.camp.ſigil.ſalom.bryon.biſmal. an.* ʒii. *coquantur completè & terantur, trajiciantur per ſetaceum, addendo farin. fœnug. & hordei, an.* ʒ.i. *olei liliorum, & chamæm.an.* ʒiii. *tereb.* ʒiv. *ceræ quantum ſufficit, fiat cataplaſma.* It reſolv's, aſſwageth pain, and calleth forth the humors to the skin. Or elſe, ℞. *rad.ſigil. beätæ Mariæ*, ʒvi. *empl.diachyl.albi*, ʒiv. *croci in aquâ vitæ diſſoluti*, ʒii. *terebinth.* ʒi. *ol.de ſpicâ nardi quantum ſufficit, fiat empl.* Let it bee ſpread upon leather, and applied warm. I have oftentimes ſuddenly aſſwaged the pain of the *Sciatica*, by putting to the pained hip the root of black Brionie cut into ſlices, and applied, when the matter was cold. Or elſe, ℞. *ceræ citrin. & tereb.abiet.an.* ʒii. *liquefiant ſimul in vaſe duplici, & ubi refrixerint, adde pulv hermodact.* ʒß. *flor.chamæm.irid.flor.an.* ʒiii. *ſpicæ nardi, flor.thymi, an.* ʒii. *interioris cinamomi elect. & ſemin.naſturt.an.* ʒii. *croci*, ℈iv. *malaxantur ſimul manibus axungiâ porci vetere non ſalitâ unctis, & fiat maſſa empl.* But if the pain bee not by this means aſſwaged, then muſt wee com to more powerful medicines, as to uſe great cupping-glaſſes applied with much flame, and to veſicatories: As, ℞. *cantharid. quibus detractæ ſunt alæ*, ʒii. *ſtaphiſagr.* ʒiii. *ſinapi*, ʒiß. *fermenti acerrimi* ʒß. *incorporentur ſimul, & fiat veſicatorium.* Alſo bliſters may bee raiſed by applying the inner rinde of Travellers-joy to the weight of ſom two drams, a little beneath the grieved part: you muſt have a care that the ulcers that remain after the skin of the bliſters is taken off, do run, and bee kept open for ſom time after, that ſo more of the humor contained in the part may bee drawn away. But if wee cannot avail by theſe means, wee muſt, according to *Hippocrates* his counſel, com to the laſt and extremeſt remedie. *Such* (ſaith hee) *as are troubled with a long pain of the* Sciatica, *have their hip fall out of joint, their leg conſume's, and they becom lame, unleſs they bee burnt.* Wee have alſo read the ſame approved by *Celſus*. *It is the laſt* (ſaith hee) *and moſt effectual medicine in longer diſeaſes, to cauterize with hot irons the skin of the hip in three or four places; and then not to heal up theſe ulcers or fontenels as ſoon as may bee, but to keep them open, by putting thereinto bullets of gold, or ſilver, or pills of gentian, or wax melted and wrought up with the powder of vitriol, mercurie, and the like cathereticks, until the affect againſt which wee uſe this remedie bee helped, for by this means manie have been helped.* Therefore three or four actual cauteries, or hot irons ſhall bee ſo thruſt in about the joint of the hip, that they may enter into the fleſh ſom fingers breadth, yet ſo that you ſhun the nervs. Cauteries here do good, for that by heating the part, they heat and diſſolv the cold humors, they cut, attenuate, and draw forth the groſs and viſcid, ſo that they flow out by the ulcers, together with the quitture. Over and beſides, the ligaments are ſtrengthned by their cicatrization, and their looſneſs helped; and by this means the whole part is notably corroborated.

Black brionie diſcuſſeth.

A ſtrong veſicatorie.

The inner rinde of Travellers-joy a veſicatorie.

*Aep.ult.ſect.6.*

*Lib.4.cap.22.*

The uſe of cauteries in the *Sciatica*.

## CHAP. XXIIII.

*Of the flatulent convulſion, or convulſive contraction, which is commonly called by the French,* Goute Grampe, *and by the Engliſh,* The Cramp.

What the Cramp is.

THat which the French call *Goute Grampe*, wee here intend to treat of, induced thereto rather by the affinitie of the name, then of the thing; for if one ſpeak truly, it is a certain kinde of convulſion generated by a flatulent matter, by the violence of whoſe running down or motion, oftimes the neck, arms, and legs are either extended, or contracted into themſelvs with great pain, but that for a ſhort time.

The cauſ thereof.

The cauſ thereof is a groſs and tough vapor, inſinuating it ſelf into the branches of the nervs, and the membranes of the muſcles. It take's one on the night, rather then on the day, for that then the heat and ſpirits uſually retire themſelvs into the entrails and centre of the bodie; whence it is that flatulencies may bee generated, which will fill up, diſtend and pull the part whereinto they run, juſt as wee ſee lute-ſtrings are extended. This affect often take's ſuch as ſwim in cold water, and cauſſeth manie to bee drowned, though excellent ſwimmers, their members by this means beeing ſo ſtraightly contracted, that they cannot by anie means bee extended. For the skin, by the coldneſs of the water is contracted and condenſed, and the pores thereof ſhut, ſo that the engendered flatulencies have no paſſage forth. Such as give themſelvs to drunkenneſs and gluttonie, or ſloth and idleneſs, are uſually more frequently troubled with this diſeaſ, by reaſon of their heaping up of crudities.

Who ſubject thereto.

The cure.

Therefore it is cured by moderate diet, and ordering of the bodie, and exerciſe of each part thereof; for thus they gather ſtrength, and the generation of the flatulent matter is hindred. In the verie time when it take's one, the patient ſhall bee cured by long rubbing with warm clothes, and *aquâ vitæ*, wherein the leavs of ſage, roſemarie, thyme, ſavorie, lavander, clovs, ginger, and the like diſcuſſing and reſolving things have been infuſed. The extenſion and flexion of the members or joints, and walking, are alſo good.

*The end of the eighteenth Book.*

# Of the *Lues Venerea*, and thoſe Symptoms which happen by means thereof.

## *The nineteenth Book.*

### CHAP. I.

THe French call the *Lues Venerea* the *Neäpolitan diſeaſ*; the Italians and Germans (as alſo the Engliſh) term it the *French diſeaſ*; the Latines call it *Pudendagra*: others name it otherwiſe. But it make's no great matter how it bee called, if the thing it ſelf bee underſtood: Therefore the *Lues Venerea* is a diſeaſ gotten or taken by touch, but chiefly that which is in unclean copulation; and it partake's of an occult qualitie, commonly takeing its original from ulcers of the privie parts, and then further manifeſting its ſelf by puſtles of the head, and other external parts; and laſtly, infecting the entrails and inner parts with cruel and nocturnal tormenting pain of the head, ſhoulders, joints, and other parts. In proceſs of time, it cauſſeth knots and hard *tophi*: and laſtly, corrupt's and foul's the bones, diſſolving them, the fleſh about them beeing ofttimes not hurt; but it corrupteth and weakneth the ſubſtance of other parts, according to the condition of each of them, the diſtemper and evil habit of the affected bodies, and the inveteration or continuance of the morbifick cauſ. For ſom loſe one of their eies, others both: Som loſe a great portion of the eie-lids, other-ſom look verie gaſtly, and not like themſelvs, and ſom becom ſquint-eied. Som loſe their hearing, others have their noſes fall flat, the palat of their mouths perforated with the loſs of the bone *Ethmoïdes*, ſo that inſtead of free and perfect utterance, they faulter and fumble in their ſpeech. Som have their mouths drawn awry, others their yards cut off, and women a great part of their privities tainted with corruption. There bee ſom, who have the *urethra* or paſſage of the yard obſtructed by budding caruncles, or inflamed puſtles, ſo that they cannot make water without the help of a Catheter, readie to die within a ſhort time, either by the ſuppreſſion of the urine, or by a gangrene ariſing in theſe parts, unleſs you ſuccor them by the amputation of their yards. Others becom lame of their arms, and other-ſom of their legs, and a third ſort grow ſtiff by the contraction of all their members; ſo that they have nothing left them ſound but their voice, which ſerveth for no other purpoſe but to bewail their miſeries, for which it is ſcantly ſufficient. Wherefore ſhould I trouble you with mention of thoſe that can ſcantly draw their breath by reaſon of an *Aſthma*: or thoſe whoſe bodies waſte with an hectick fever, and ſlow conſumption? It fare's far worſ with theſe, who have all their bodies deformed by a leproſie ariſeing there-hence, and have all their throttles and throats eaten with putrid and cancrous ulcers; their hair falling off from their heads, their hands and feet cleft with tetters and ſcalie chinks: neither is their caſe much better, who, haveing their brains tainted with this diſeaſ, have their whole bodies ſhaken by fits of falling-ſickneſs; who troubled with a filthie and curſed flux of the bellie, do continually caſt forth ſtinking and bloodie filth. Laſtly, there are no kindes of diſeaſes, no ſorts of ſymptoms, wherewith this diſeaſ is not complicate, never to bee taken away, unleſs the virulencie of this murrain bee wholly taken away, and impugned by its proper antidote, that is, *argentum vivum*.

What the *Lues Venerea* is.

What hurt it doth to the bodie.

The Leproſie ſomtimes the off-ſpring of the *Lues Venerea*.

### CHAP. II.

*Of the cauſſes of the* Lues Venerea.

THere are two efficient cauſſes of the *Lues Venerea*; the firſt is, a certain occult and ſpecifick qualitie, which cannot bee demonſtrated; yet it may bee referred to God, as by whoſe command this hath aſſailed mankinde, as a ſcourge or puniſhment to reſtrain the too wanton and laſcivious luſts of unpure whoremongers. The other is an impure touch or contagion, and principally, that which happeneth in copulation. Whether the man or woman have their privities troubled with virulent ulcers, or bee moleſted with a virulent ſtrangurie (which diſeaſ craftie Whores color by the name of the whites) the malignitie catcheth hold of the other; thus a woman

The *Lues Venerea* the ſcourge of Whore-mongers.

taketh this diſeaſ by a man, caſting it in her hot, open and moiſt womb; but a man taketh it from a woman, which, for example ſake, hath ſom ſmall while before received the virulent ſeed of a whore-maſter polluted with this diſeaſ, the mucous *ſanies* whereof remaining in the wrinckles of the woman's womb, may bee drawn in by the pores of the ſtanding and open yard, whence ſucceed malign ulcers, and a virulent ſtrangurie. This virulencie, like a torch or candle ſet on fire, will by little and little bee propagated and ſent by the veins, arteries and nerves to the noble parts; whoſe malignitie a ſtrong liver not endureing, by the ſtrength of the natural expulſive facultie, will ſend it into the groins, whereon follow abſceſſes, therefore called *Venereal Bubo's*. Theſe, if they return in again, and caſt not forth matter by beeing opened, they will, by their falling back into the veins and arteries, infect the maſs of the blood by the like tainture, and thence will enſue the *Lues Venerea*. Yet this diſeaſ may bee got by a more occult manner of touch, as by breathing onely. For it is not altogether beſides reaſon and experience, that a woman long troubled with this diſeaſ, may by importunate and often kiſſing, transfuſe malignitie into a childe; for the tender and ſoft ſubſtance of a little childe may bee altered, infected, and by little and little corrupted by receiving of filthie, and in their whole kinde malign vapors. For it is known, and now vulgarly beleeved, that mid-wives, by receiving the childe of a woman infected with this diſeaſ, to have got this affect, the malignitie beeing taken and drawn into their bodies through the pores of their hands by the paſſages of the veins and arteries. Neither doth it ſpare anie condition, ſex, nor age of men: for, not onely whoſoever uſe copulation, but ſuch as onely lie with them, may bee taken by this virulencie; yea verily, if they onely lie in the ſheets or coverings which retain his ſweat, or the virulencie caſt forth by an ulcer. The ſame danger may aſſail thoſe who ſhall drink in the ſame veſſel after ſuch as are troubled with this diſeaſ. For by the impure touch of their lips, they leav a virulent *ſanies* and ſpittle upon the edges of the cup, which is no leſs contagious in its kinde then the virulencie of leprous perſons, or the ſome of mad dogs. Wherefore it is no marvel if children nurſed by an infected nurſ, draw in the ſeeds of this diſeaſ together with the milk, which is onely blood whitened in the breaſts; or infected ſucking children by their hot and ulcerated mouths, may transfuſe this malignitie into the bodie of the nurſ, by the rare, looſ and porous ſubſtance of the dugs which it frequently ſucketh.

Venereal Bubo's returning in again, occaſion the *Lues Venerea*.

The *Lues Venerea* may bee got by the onely communication of vapor.

How nurſes may infect children, and they their nurſes.

This following hiſtorie is verie memorable to this purpoſe. A certain verie good Cittizen of this Cittie of Paris granted to his wife, beeing a verie chaſte woman, that conditionally ſhee ſhould nurſ her own childe, of which ſhee was lately delivered, ſhee ſhould have a nurſ in the houſ to eaſ her of ſom part of the labor: by ill hap, the nurſ they took was troubled with this diſeaſ; wherfore ſhee preſently infected the childe, the childe the mother, the mother her husband, and hee two of his children, who frequently accompanied him at bed & board, beeing ignorant of that malignitie wherewith hee was inwardly tainted. In the mean while the mother when ſhee obſerved that her nurſ-childe came not forward, but cried almoſt perpetually, ſhee asked my counſel to tell her the cauſ of the diſeaſ; which was not hard to bee don, for the whole bodie thereof was repleniſhed with venereal ſcabs and puſtles, the hired nurſes and the mother's nipples were eaten in with virulent ulcers; alſo the father's, and the two other children's bodies, whereof the one was three, the other four years old, were troubled with the like puſtles and ſcabs. I told them, that they had all the *Lues Venerea*, which took its original and firſt off-ſpring by malign contagion from the hired nurſ. I had them in cure, and by God's help healed them all, except the ſucking-childe, which died in the cure. But the hired nurſ was ſoundly laſhed in the priſon, and ſhould have been whipped through all the ſtreets of the Cittie, but that the Magiſtrate had a care to preſerv the credit of the unfortunate familie.

An hiſtorie.

## CHAP. III.

*In what humor the malignitie of the* Lues Venerea *reſide's.*

Though in the opinion of manie the antecedent cauſ of this diſeaſ bee the maſs of blood containing the four humors, yet I had rather place the matter, and primarie, and chief ſeat thereof in groſs and viſcid phlegm infected with the malign qualitie of the venereous venom, and from this beginning and foundation, I think by a certain contagious growth it ſooner or later infect's the other humors, as each of them is diſpoſed or apt to ſuffer. Of which my opinion there are manie arguments, but this chiefly, That by the evacuation of a phlegmatick humor, whether by the mouth and ſalivation, or by ſtool, urine, or ſweat in men of what temper ſoever, whether cholerick, ſanguine or melancholick, the diſeaſ is helped or cured. Secondly, for that the exceſs of pain is more by night then by day, becauſ then the phlegm bearing ſway, fever's the *perioſtium* from the bone, or elſ offend's it and the reſt of the membranous and nervous bodies by the acrimonie of its malignitie. Thirdly, becauſ the patients are hurt by the uſe of cold things, but uſually finde benefit by hot medicines, whether they bee

Why the pain is worſ upon the night, then on the day.

bee ointments, pla ters fumigations, or whatſoever elſ, inwardly taken, or outwardly applied. Fourthly, for that in venereous puſtles there is found a certain hardneſs at the root, though outwardly they make ſhew of choler or blood. For beeing opened, you ſhall finde them ſtuffed with a certain plaſter like and tophous matter, or elſ with rough phlegm, or viſcous *pus*; whence ariſe theſe hard *tophi*, or bonie excreſcences upon the bones, if not from phlegmatick humors there heaped up and concrete. Fifthly, for that the ſpermatick and cold parts do primarily and principally feel the harm of this diſeaſ. Sixthly, for that the ulcers which over-ſpread the bodie by reaſon of this diſeaſ, admit of no cure, unleſs you cauſ ſweats. Therefore if the matter of the diſeaſ, and ſuch ulcers as accompanie it, were hot and drie, it would grow worſ, and bee rather increaſed by a decoction of *Guajacum*, the roots of *China*, or *ſarſaparilla*. Seventhly, becauſ oftimes this diſeaſ, the ſeed thereof beeing taken or drawn into the bodie, ſo lieth hid for the ſpace of a yeer, that it ſhew's no ſign thereof, which happen's not in diſeaſes proceeding from an hot matter, which cauſſeth quick and violent motions. By this it appeareth that the *baſis* and foundation of the *Lues venerea* is placed or ſeated in a phlegmatick humor; yet may not denie, but that other humors confuſed therewith may bee alſo in fault, and defiled with the like contagion. For there are ſcarce anie tumors which proceed from a ſimple humor, and that of one kinde, but as in tumors, ſo here the denomination is to bee taken from that humor which carrieth the chief ſway.

This diſeaſ ſomtimes lie's long hid in the bodie before it ſhew it ſelf.

## CHAP. IV.

### *Of the ſigns of the* Lues Venerea.

When the *Lues venerea* is lately taken, malign ulcers appear in the privities, ſwellings in the groins, a virulent ſtrangurie runneth ofttimes with filthie *ſanies* which proceed's either from the *proſtatæ*, or the ulcers of *urethra*; the patient is troubled with pains in his joints, head, and ſhoulders, and as it were breakings of his arms, legs and all his members, they are wearie without a cauſ, ſo that neither the foot nor hand can eaſily perform his dutie; their mouths are inflamed, a ſwelling trouble's their throats, which take's away their freedom of ſpeaking and ſwallowing, yea of their verie ſpittle; puſtles riſe over all their bodies, but chiefly certain garlands of them engirt their temples and heads; the ſhedding or loſs of the hair, diſgraceth the head and chin; and leanneſs deformeth the reſt of the bodie; yet all of theſe uſe not to appear in all bodies, but ſom of them in ſom. But the moſt certain ſigns of this diſeaſ are, a callous ulcer in the privities, hard and ill conditioned, and this ſame is judged to have the ſame force in a prognoſtick, if after it bee cicatrized, it retain the ſame callous hardneſs; the Bubo's or ſwellings in the groins to return back into the bodie without coming to ſuppuration or other manifeſt cauſ: theſe two ſigns, if they concur in the ſame patient, you may judg or foretel that the *Lues venerea* is either preſent, or at hand; yet this diſeaſ happeneth to manie without the concourſ of theſe two ſigns, which alſo bewraieth it ſelf by other manifeſt ſigns, as ulcers and puſtles in the reſt of the bodie, rebellious againſt medicines though powerful, and diſcreetly applied, unleſs the whole bodie bee anointed with *Argentum vivum*. But when as the diſeaſ becometh inveterate, manie becom impotent to venerie, and the malignitie and number of the ſymptoms encreaſ, their pains remain fixed and ſtable, verie hard and knotted *tophi* grow upon the bones, and oftimes they becom rotten and foul, as alſo the hands and feet by the corruption of ſalt phlegm are troubled with chops or clefts, and their heads are ſeazed upon by an *ophiaſis* and *alopecia*; whitiſh tumors with roots deep faſtned in, ariſe in ſundrie parts of the bodie, filled with a matter like the meat of a cheſnut, or like a tendon; if they bee opened they degenerate into diverſ ulcers, as putrid, eating, and other ſuch, according to the nature and conditon of the affected bodies. But why the pains are more grievous on the night ſeaſon, this may bee added to the true reaſon wee rendred in the precedent Chapter, firſt for that the venereous virulencie lying as it were aſleep is ſtirred up and enraged by the warmneſs of the bed and coverings thereof; Secondly, by reaſon of the patient's thoughts which on the night ſeaſon are wholly turned and fixed upon the onely ob ject of pain.

The moſt certain ſigns of the *Lues venerea*.

Two other cauſes of the exceſs of pain in the night.

## CHAP. V.

### *Of Prognoſticks.*

If the diſeaſ bee lately taken, aſſociated by a few ſymptoms, as with ſom ſmal number of puſtles, and little and wandring pains, and the bodie beſides bee young and in good caſe, and the conſtitution of the ſeaſon bee good and favorable, as the Spring, then the cure is eaſie, and may bee happily performed. But on the contrarie, that which is inveterate and enraged by the fellowſhip of manie and malign ſymptoms, as

The ſigns of a curcable *Lues venerea*.

as a fixed pain of the head, knots and rottenneſs of the bones, ill-natur'd ulcers in a bodie verie much fallen away and weak, and whereof the cure hath been alreadie ſundrie times undertaken by Empyricks, but in vain; or elſ by learned Phyſicians, but to whoſe remedies, approved by reaſon and experience, the malignitie of the diſeaſ and the rebellious virulencie hath refuſed to yeeld, is to bee thought incureable, eſpecially, if to theſe ſo manie evils, this bee added, that the patient bee almoſt waſted with a conſumption and hectick leanneſs, by reaſon of the decaie of the native moiſture. Wherefore you muſt onely attempt ſuch by a palliative cure; yet bee warie here in makeing your prognoſtick: for many have been accounted in a deſperate caſe, who have recovered; for by the benefit of God and nature, wonders oftimes happen in diſeaſes. Young men who are of a rare or lax habit of bodie are more ſubject to this diſeaſ, then ſuch as are of a contrarie habit and complexion. For as not all who are converſant with ſuch as have the Plague, or live in a peſtilent air, are alike affected; ſo neither all who lie or accompanie with ſuch as have the *Lues venerea*, are alike infected or tainted. The pains of ſuch as have this diſeaſ, are far different from the pains of the Gout. For thoſe of the Gout return and torment by certain periods and fits, but the other are continual and almoſt alwaies like themſelvs; Goutie pains poſſeſs the joints, and in theſe condenſ a plaſter-like matter into knots; but thoſe of the Pocks are rather faſtned in the mid'ſt of the bones, and at length diſſolv them by rottenneſs and putrefaction. Venereous ulcers which are upon the yard are hard to cure, but if beeing healed, they ſhall remain hard and callous, they are ſigns of the diſeaſ lying hid in the bodie.

The ſigns of an incureable noe.

How theſe pains differ from thoſe of the gout.

Generally, the *Lues venerea* which now reigneth is far more milde and eaſie to bee cured then that which was in former times, when as it firſt began amongſt us: beſides, each day it ſeemeth to bee milder then other. Aſtrologers think the cauſ hereof to bee this, for that the celeſtial influences which firſt brought in this diſeaſ, in ſucceſs of time by the contrarie revolutions of the Stars, loſe their power and becom weak; ſo that it may ſeem ſomwhat likely, that at length after ſom few yeers it may wholly ceaſ; no otherwiſe then the diſeaſ termed *Mentagra*, which was verie like this in manie ſymptoms, and troubled manie of the Romans in the reign of *Tiberius*; and the *Lichen*, which in the time of *Claudius* (who ſucceeded *Tiberius*) vexed not onely *Italie*, but all *Europe* beſides. Yet Phyſicians had rather take to themſelvs the glorie of this leſs rageing diſeaſ, and to refer it to the manie and wholſom means, which have been invented, uſed and oppoſed thereto by the moſt happie labors of noble wits.

The *Lues venerea* becom's more gentle then formerly it was.

## CHAP. VI.

*How manie, and what means there are to oppugn this diſeaſ.*

Why the decoction of *Guaicum* is not ſufficient to impugn the diſeaſ.

MAnie ſorts of remedies have been found out by manie to oppugn and overcom this diſeaſ. Yet at this daie there are onely four which are principally uſed. The firſt is by a decoction of *Guaicum*; the ſecond by unction; the third by emplaſters, and the fourth by fumigation: all of them by *Hydrargyrum*, the firſt excepted. Yet that is not ſufficiently ſtrong and powerful; for experience hath taught, that the decoction of *Guaicum* hath not ſufficient ſtrength to extinguiſh the venom of the venereous virulencie, but onely to give it eaſ for a time; for becauſ it heat's, attenuate's, provoke's ſweat and urine, waſt's the excrementitious humors by drying them, it ſeemeth to cure the diſeaſ, for that thereupon, for ſom time, the pain and all other ſymptoms ſeem more remiſs; but theſe endeavors are weak and deceitful, as whereby that onely which is more ſubtle in the humors in fault, is exhauſted and diſperſed by ſweat. But *Hydrargyrum* is ſufficient to overcom the diſeaſ.

*Hydrargyrum*, is a certain higher power, contain's therein all the power of *Guaicum*, yet much more excellent and efficacious; for beſides that it heat's, attenuate's, cut's, reſolv's and drie's, it provoke's ſweat and urine, and beſides it expel's noxious humors upwards and downwards, by the mouth and ſtool. By which evacuations not onely the more ſubtle, but alſo the more groſs and feculent excrements, wherein the ſeat of this diſeaſ is properly fixed, are diſperſed and evacuated; by which the Phyſician may bee bold to aſſure himſelf of certain victorie over the diſeaſ. But after the uſe of the decoction of *Guaicum*, freſh pains and knots ariſe by the reliques of the more groſs and viſcous humors left in the cavities of the entrails; but *Hydrargyrum* leav's no reliques behinde it.

## CHAP. VII.

*How to make choice of the wood* Guaicum.

THat is preferred before the reſt, which is of a great log, of a duskie color, new, gummie, with a freſh ſtrong ſmell, an acrid and ſomwhat biteing taſte, the bark cleaving verie cloſe to the wood. It hath a facultie to heat, rarifie, attenuate, attract, to cauſ ſweat, and move urine, and beſides by a ſpecifick propertie to weaken the virulencie of the *Lues venerea*.

The facultie.

*nerea.* There are three ſubſtances taken notice of in this wood: the firſt is the bark, the other is a whitiſh wood which is next to the bark, the third is the heart of the wood, that is the inner, blackiſh, and more duskie part thereof. The bark is the more drie, wherefore you ſhall uſe it when as you would drie more powerfully; the midle ſubſtance is more moiſt, becauſ it is more ſucculent and fat; that which lieth between both, is of a milde temper. Wherefore the two laſt are more convenient for delicate natures and rare bodies, which require leſs drying. Furthermore, the bark muſt bee given to denſ and ſtrong natures, that by the more fierie force thereof, the humors may bee made more fluid, and the paſſages of the bodie more paſſable. But I would here bee underſtood to mean ſuch bark as not putrid & rotten with age, to which fault it is verie ſubject, for that long before it bee ſhipped by our people, the wood lieth in heaps upon the ſhore in the open air, until they can finde chapmen for it; which when it is brought aboard, it is ſtowed in the hold or bottom of the ſhip, where beneath by the ſea through the the chinks of the boards, and above by the mariners, it uſually gathereth much dirt. When it is brought hither to us, it is bought and ſold by weight, wherefore, that it may keep the weight, the Druggiſts lay it up in vaults and cellars under ground, where the ſurface thereof bedewed with much moiſture, can ſcarce eſcape mouldineſs and rottenneſs. Wherefore, I do not like to give the decoction either of the bark or wood which is next thereto to ſick people.

The parts.

The hot and fierie facultie of the bark.

## CHAP. VIII.

### *Of the preparation of the decoction of* Guaicum.

FIrſt you muſt have your *Guaicum* ſhaved into ſmall pieces, and to everie pound of the ſhaveings, add of fair water eight, ten, or twelv pintes, more or leſs as the nature of the partie, and condition of the diſeaſ ſhall ſeem to require, according to the rule of the formerly mentioned indications. Let the water bee hot or warm, eſpecially if it bee in Winter, that ſo it may the more eaſily and throughly enter into the bodie of the wood, and draw into it ſelf the faculties thereof in the ſpace of twentie four hours, wherein it is macerated; then boil it in *in balneo*, to avoid *empyreuma*, or taſte of fire, which it will contract by boiling it over a hot fire. Yet ſom, nothing regard this, but think the patient ſufficiently ſerved, if they make a decoction in an earthen-pot well glazed, over a gentle fire, ſo that no part of the liquor may run over the mouth of the veſſel, for that thus ſo much of the ſtrength of the decoction might vaniſh away. Howſoever it bee made, let it bee boiled to the conſumption of half, a third, or fourth part, as the nature of the patient, and diſeaſ ſhall ſeem to require. There bee ſom who mix diverſ ſimples therwith, which have an occult and proper ſympathie with that part of the bodie which is principally hurt by the diſeaſ, which at the leaſt may ſerv in ſtead of a vehicle to carrie the faculties of the decoction thither where the diſeaſ moſt reigneth. Others add thereto purgeing medicines, whoſe judgment I cannot approve of, for that I think it is not for the patient's good to attempt two evacuations at once; that is to expell the humors by ſweat, by the habit of the bodie, and by purgeing by the bellie; for that as much urine, ſo alſo much ſweat ſhew's little evacuation by ſtool. For theſe two motions are contrarie, which nature cannot brook at once. For purgeing draw's from the Circumference to the Center, but ſweat run's a quite contrarie courſ, and this is the opinion of manie and great Phyſicians. This firſt decoction beeing boiled out and ſtrained, the like quantitie of water ſhall bee put to the ſtuff, or maſs, that ſo beeing boiled again without anie further infuſion, and ſtrained, with the addition of a little cinnamon for the ſtrengthening of the ſtomack, the patient may uſe it at his meals, and between his meals, if hee bee drie, for his ordinarie drink. The quantitie of the firſt decoction to bee taken at once, ought to bee ſom five or ſix ounces, and it ſhall bee drunk warm, that ſo it may bee the ſooner brought into action, and leſt the actual coldneſs ſhould offend the ſtomach; and then the patient beeing well covered, ſhall keep himſelf in bed, and there expect ſweat which if it com ſlowly on, it ſhall bee helped forwards with ſtone-bottles filled full of water, and put to the ſoles of the feet. If anie parts in the interim ſhall bee much pained, they ſhall bee comforted by applying of ſwines-bladders half filled with the ſame decoction heated. Neither will it bee unprofitable before the decoction bee drunk, to rub over all the bodie with warm linnen clothes, that by this means the humors may bee attenuated, and the pores of the skin opened. When hee ſhall have ſwet ſom two hours, the parts oppoſite to the grieved places, ſhall firſt bee wiped, then preſently, but more gently the grieved parts themſelvs, leſt a greater conflux of humors flow thereto. Theſe things beeing don, hee ſhall keep himſelf in bed, ſhunning the cold air until hee bee cooled and com to himſelf again, ſom two hours after hee ſhall ſo dine, as the diſeaſ and his former cuſtom ſhall ſeem to require; ſix hours after, betakeing himſelf to his bed, hee ſhall drink the like quantitie of the decoction, and order himſelf as before. But if hee bee either weak, or wearie of his bed, it ſhall bee ſufficient to keep the houſ without lying down; for although hee ſhall not ſweat, yet there will bee a great diſſipation of the vapors

The proportion of the *Guaicum* to the water.

Why the decoction ought to bee performed with a drie heat.

Whether it bee fit to add purges to a decoction of *Guaicum*.

*Hip.aph.ult. ſect.6.*

How, and in what quantitie this decoction muſt bee taken.

How to drie the ſweat of the bodie.

vapors, and venenate ſpirits, by inſenſible tranſpiration; for the *Lues venera* by the onely communication of theſe, often times catcheth hold, and propagat'es it ſelf in lying with a bedfellow tainted therewith. But as it is requiſite to have let blood, and purged the bodie by the advice of a Phyſician, before the takeing of the decoction of *Guaicum*; ſo whil'ſt hee doth take it, it much conduceth to keep the bellie ſoluble (which is much bound by the heat and drieneſs of ſuch a drink) and to preſerv the puritie of the firſt veins by a glyſter, or laxative medicine taken everie fifth, or ſixth day. But for the uſe of it, wee muſt warily obſerv, takeing indication, not onely from the malignitie and contumacie of the diſeaſ, but alſo from the particular nature of the patient; for ſuch as have their bodie waſted by heat & leanneſs, & their skin drie and ſcalie (whence you may gather a great aduſtion of the humors, &, as it were, a certain incineration of the habit of the bodie) muſt more ſpareingly make uſe of theſe things, but rather temper the bodie by humecting things taken inwardly, and applied outwardly, as bathes, ointments without Quick-ſilver, and other ſuch like things. And then a verie weak decoction of *Guaicum* ſhall bee uſed for a few daies before your unction with Quick-ſilver. A more plentiful diet, as it draw's forth the diſeaſ, which of its own nature is long, ſo a more ſpareing and ſlender diet make's the ulcers more rebellious and contumacious, by a hectick drieneſs.

How long this decoction muſt bee uſed.

The manner of diet.

Therefore a middle courſ muſt bee kept, and meats made choice of which are fit, and naturally engender good and laudable juice in the bodie. For it is not onely great ignorance, but much more crueltie, to go about to contein all patients without anie difference, within the ſtrait allowance of four ounces of Ship-bisket, & twelv damask prunes: for I judg it far better to diet the patient with Lamb, Veal, Kid, Pullets, fat Larks, and black-birds, as thoſe which have a greater familiaritie with our bodies, then Prunes and the like Junkets. Let his bread bee made of white wheat, well levened, neither too new, or tough, neither too old or hard. Let his drink bee made of the maſs, or ſtrainings of the firſt decoction of *Guaicum* boiled with more water, as was formerly mentioned; yet if there ariſe anie great weakneſs of the faculties, you may permit the uſe of ſom little wine, drinking eſpecially before each a cup of the laſt mentioned decoction. Let him avoid ſleep preſently after meat, for ſo the head is filled with groſs vapors. Paſſions, or perturbations of the minde muſt alſo bee avoided, for that by theſe the ſpirits are inflamed and diſſipated; all the delights of honeſt pleaſure are to bee deſired, but venerie wholly avoided, as that which weaken's all the nervous parts. Manie in ſtead of a decoction of *Guaicum*, uſe a decoction of *China*. Now this *China* is the root of a certain Ruſh, knottie, rare, and heavie, when it is freſh, but light when it is waxed old; it is alſo without ſmell, whence manie judg it void of anie effectual qualitie, it is brought into uſe out of *India*, it it thus prepar'd, it is cut into thin round ſlices, boil'd in fountain or river water, and is given to patients to drink morning & evening after this manner. R. *rad. chin. in talcol, ſect.* ℥ii. *aquæ font.* ℔xii. *infundantur per hor.* xii. *& coquantur ad conſumption. tertiæ partis.* Let him take ℥vi. in the morning, and ſo much at night; let him expect a ſweat in his bed: a ſecond decoction may bee made of the maſs remaining of the firſt, but with a leſs quantitie of water put thereto, which alſo by longer boiling may draw forth the ſtrength remaining in the maſs, and bee uſed at meals for ordinarie drink. There are ſom who make a third decoction thereof, but that is wholly unprofitable & unuſeful. *Sarſaparilla* is prepared alſo juſt after the ſame manner.

To whom, and what manner of wine may bee allowed

The deſcription of *China*.

The preparation.

Of *Sarſaparilla*.

## CHAP. IX.

*Of the ſecond manner of cureing the* Lues Venerea, *which is performed by friction or unction.*

When the bodie muſt bee prepared with humecting things before unction.

THe cure of the *Lues Venerea* which is performed by unction and friction is more certain, yet not in everie kinde, condition and ſeaſon thereof. For if the dieaſ bee inveterate from an humor, tough, groſs, viſcous, and more tenaciouſly fixed in the ſolid parts, as you may gather by the knottie tumors of the bones; for then wee are ſo far from doing anie good with a friction uſed at the firſt, that on the contrarie wee bring the patient in danger of his life, unleſs wee ſhal have firſt prepared the humor to expulſion, by emollient and digeſting things firſt uſed. But if it bee lately taken with moveable pains, puſtles, and ulcers in the jaws, throat and privie parts, then may it bee eaſily cured without ſuch preparatives, eſpecially if the humor bee ſufficiently obedient, and as it were prepared of it ſelf, and its own nature. Therefore firſt uſeing general medicines, you may afterwards com to uſe the unction with *Hydrargyrum*.

## CHAP. X.

*Of the choice preparation and mixing of* Hydrargyrum.

*Hydrargyrum* which is cleer, thin, white and fluid, is the beſt: on the contrarie, that which is livid, aud not ſo fluid, is thought to bee adulterated by the admixture of ſom lead.

lead. That it may bee the purer, ſtrain it through ſom ſheeps-leather, for by preſſing it, when it is bound up, it paſſeth through by its ſubtiltie, and leav's the filth and leaden droſs behinde it on the inſide. Then it may bee boil'd in vineger with ſage, roſemarie, thyme, camomile, melilote, and ſtrained again, that ſo manie waies cleanſed, it may enter into ointments and plaſters: To kill it more ſurely, it ſhall bee long wrought, and as it were ground in a mortar, that it may bee broken and ſeparated into moſt ſmall particles, that by this means it may not bee able to gather it ſelf into the former bodie: to which purpoſe you may alſo add ſom *ſulphur*, or *ſublimate*, as wee ſhall ſhew hereafter. It is moſt uſually mixed with hogs-greaſ, adding thereto ſow oil of turpentine, nutmegs, cloves, ſage, and *Galen's* treacle. If a *Leucophlegmatia* together with the *Lues Venerea* affect the bodie, then hot, attenuateing, cutting and dying things ſhall bee added to the medicine, which ſhall bee provided for unction; the ſame ſhall bee don when as wee would have it to enter into the ſubſtance of the bones. But if the patient bee of a cholerick temper, and his blood eaſie to bee inflamed, you ſhall make choice of leſs hot, attractive and diſcuſſing things. As when the bodie ſhall bee repleniſhed with knottie and ſcirrhous tumors, or ſqualid by exceſſive drineſs, then ſhall emollient and humecting things mixed therewith. But that ſuch ointments may have a better conſiſtence, I uſe to add to each pound thereof, four, five, or ſix yolks of hard eggs. Therefore this ſhall bee the form of the ointment called Vigoes. ℞. *axung. porci*, ℔i. *olei chamæm. aneth. maſtich. & laurini, an.* ℥i. *ſtyrac. liquid.* ℥x. *rad enulæ, camp. parùm tritæ, & ebuli, an.* ℥iii. *pul. euphorb.* ℥ß. *vini odorif.* ℞i. *bulliant omnia ſimul uſque ad conſumptionem vini, deinde colentur; colaturæ adde lythargyræ auri*, ℥vi. *thuris, maſtich. an.* ℥vi. *reſ. pini*, ℥iß. *tereb. venet.* ℥i. *argenti vivi*, ℥iv. *ceræ albæ*, ℥iiß. *liquefactis oleis, tum cerâ incorporentur omnia ſimul, fiat linimentum ad uſum.* Or elſ, ℞. *argenti vivi præparati*, ℥vi. *ſublimiti*, ℥ß. *ſulpuris vivi*, ℥ß. *axung. porci, ſalis expertis*, ℔i. *vitellos ovorum ſub cineribus coctorum*, nu. iii. *olei terebinth. & laurini, an.* ℥ii. *theriac. vet. & methridat.* ℥ß. *fiat linimentum ut artis eſt.* You ſhall compoſe it thus, firſt the *ſublimatum* and *ſulphur* ſhall bee finely poudred, then ſom part of the *Argentum vivum* and hog-greaſ put to them, then preſently after, ſom of the hard yolks of eggs, continually and diligently ſtirring and mixing them all together. All theſe beeing well incorporate, add ſom more *Argentum vivum*, hogs-greaſ, and yolks of eggs, and incorporate them with the former; at the laſt add the oils, then treacle, and methridate, and ſo let them all bee beaten together for a whole daies ſpace, and thus you ſhall make an oinment of a good conſiſtence, which I have often uſed with good ſucceſs. Yet the hogs-greaſ ſhall bee firſt boiled with the hot herbs good for the ſinews, as ſage, roſemarie, thyme, marjerom, lavander and others which the ſeaſon afford's. For ſo the *axungia* acquire's a more attenuating facultie, and conſolidateing of thoſe parts which the *Lues Venerea* afflict's. Beſides, when unguents are made for this purpoſe, that ſuch virulencie may bee drawn from within outwards, by ſweats and tranſpiration through the pores of the skin, no man need doubt, but that they ought to bee furniſhed with relaxing, and rarifying, and attractive faculties. But *axungia*, beſides that it verie fit ro kill the *Argentum vivum*, it alſo relaxeth and mollifieth. Now *Oleum laurinum, de ſpicâ, rutaceum*, rarifie, digeſt and aſſwage pain. Turpentine alſo extinguiſheth and bridleth the *Argentum vivum*, moderately heat's, reſolv's and ſtrengthen's the nervous parts. But *Argentum vivum* is the proper antidote of the *Lues Venerea*, as that which cure's it howſoever uſed, drying by the ſubtiltie of the parts, and provokeing ſweat. Verily Treacle and Methridate ſomwhat conduce to retund the virulencie of this diſeaſ, but unleſs *Argentum vivum* aſſiſt as a ferret to hunt, and an *Alexiterium* to impugn the diſeaſ, they can do no great matter

How to kill *argentum vivum.*

What to mix therewith.

An unction with *argentum vivum.*

Another.

How to make it.

How to prepare the hog's-greaſ before you mix the *argentum vivum* therewith.

## CHAP. XI.

### *How to uſe the Unction.*

He bodie and humors apt to cauſ or nouriſh a *plethora* or inflammation, beeing prepared by digeſtive ſirups, and evacuated by purgeing and bleeding as is fitting, according to the direction of ſom Phyſitian, the patient ſhall bee ſhut up in a parlor or chamber, hot either by nature or art, and free from cold blaſts of winde. For cold is moſt pernitious in this diſeaſ, both for that it hurt's the nervous parts, alreadie ill affected by reaſon of the diſeaſ, as alſo for that it leſſen's the efficacie of medicines. Wherefore manie do ill in this, who, whether in winter or ſummer, annoint their patients in a large room, expoſed on everie ſide to the windes. They deal ſomwhat more wiſely, who put a cloth faſned like half a tent preſently behinde the patient, though annointed by the fire-ſide, ſo to keep away the cold air from him. Yet it is ſafeſt to ſet, and annoint the patient either in a little room, or elſ in ſom corner of a large room, ſeparated from the reſt of the room by ſom hangings, and building a ſtove, or makeing ſom fire therein, for ſo hee may ſtand or ſit as hee beſt like's, the longer, and with the leſs offence, and bee equally heated on everie ſide, whereas ſuch as are annointed in a chimney by a fire's ſide cannot but bee heated unequally, beeing readie to burn on the one ſide, whil'ſt the other is cold, which motions are contrarie and hurtful to that wee require: beſides, if the patient ſhall bee weak, hee

Cold moſt hurtful to ſuch as are troubled with the *Lues venerea.*

hee cannot ſtand and endure the heat of the fire. Or if hee bee ſhamefac't, hee will bee unwilling to ſhew all his bodie at once naked to the Surgeon, but hee may without anie harm, and with modeſtie, lying on a bed in a little room, wherein a ſtove is made, have all his lims annointed about the joints, and preſently bound up, either with ſtoups, or carded cotton, or brown paper.

## CHAP. XII.

*What cautions to bee obſerved in rubbing or annointing the Patient.*

The patient, if it may bee conveniently don, muſt bee annointed faſting.

HEe ſhall bee annointed or rubbed over with the ointment in the morning, the concoction and diſtribution of the meat beeing perfected, which functions otherwiſe would not bee well performed, the powers of nature beeing diſtracted into ſeveral operations. Yet if the patient ſhall bee weak, you may ſom hour before the unction, give him ſom gellie, the yolk of an egg, or ſom broth made of meat, boiled to pieces, but verie ſpareingly, leſt nature, intent upon the concoction of ſolid meats, or in great quantitie, ſhould bee drawn away from that which wee intend. At firſt, let onely the joints of the lims bee annointed, as about the wreſts, elbows, knees, anckles, ſhoulders. But afterward, if the patient ſhall bee more ſtrong, and a greater commotion of the humors and bodie ſeem neceſſarie, the emunctories of the principal parts may alſo bee annointed, and the whole ſpine of the back; yet haveing much care, and alwaies ſhunning the principal and noble parts, leſt wee ſhould do as thoſe butcherlie Empericks do, who equally, and in like manner daub and rub over all the bodie, from the ſoles of the feet, to the crown of the head: moreover, diligent regard muſt bee had of thoſe parts, which are ſeazed upon by the ſymptoms of this diſeaſe, that they may bee more annointed, and that it may bee more throughly rubbed in. Yet you muſt alwaies begin your annointing or rubbing at thoſe parts which are leſs offended, leſt the humors ſhould bee drawn in greater meaſure to the grieved part. And as gentle frications do not ſufficiently open the pores of the skin, ſo more ſtrong and hard ones ſhut them up, cauſ pain, and more plentifully attract the morbifick matter. Wherefore it will bee more couvenient to uſe moderate frictions, takeing indication from the ſtrength of the patient, as that whereto wee muſt ſtill have the chief regard. There is alſo another thing whereto the Phyſician and Surgeon muſt diligently attend, as that, which if it bee not carefully prevented, will either haſten the death of the patient, or make him ſubject to a relapſ; that is, the quantitie of the remedies and unctions, and the number of the frictions. Which conſideration, together with that which is of the degrees of the temperaments of the whole bodie, and each part thereof, much trouble's the mindes of good Phyſicians, and maketh the art conjectural, it is far from beeing attained to by Empericks. Yet wee muſt endeavor by method and reaſon, that by the rule of indications ſo frequently mentioned, wee may attain to the knowledg thereof, as near as may bee. For to have perfect knowledg hereof, and to ſay that thoſe need onely four, others five, and otherſom ſix, more or fewer frictions at the beginning, which Empericks commonly do, is a thing both impoſſible and vain. All theſe muſt bee changed and ordered according to the malignitie and continuance of the diſeaſ, and the condition of the affected bodies. Verily wee muſt ſo long uſe frictions and unctions, until the virulent humors bee perfectly evacuated by ſpitting and ſalivation, by ſtool, urine, ſweat, or inſenſible tranſpiration. Which you may underſtand by the falling away and drying up of the puſtles and ulcers, and the ceaſing of the pains and other ſymptoms proper to this diſeaſ. In manie, by reaſon of the more denſ and compact habit of the bodie nature is more ſlow in excretion. Yet I have learn't by long experience, that it is beſt to annoint and chafe ſuch twice in a daie, to wit, morning and evening, ſix hours after meat. For ſo you ſhall profit more in one daie, then by the ſingle friction of three daies. But on the contraie, I have often, and with good ſucceſs, rubbed over but each other day more rare and delicate bodies, giveing them one or two daies reſt to recollect their ſtrength, which by the too much diſſolution of their ſpirits becomming too weak, were not ſufficient to expell the reliques of the morbifick matter. And certainly about the end of the appointed friction, eſpecially when as the patient begin's to flux at the mouth, the bodies, together with the noxious humors are made ſo fluid by the means of the precedent friction, that one friction is then more efficacious then two were at the beginning. Therefore as *Galen* bid's, when as the diſeaſ is great, and the ſtrength of the patient infirm, that wee ſhould part our blood-lettings, and draw a little and a little at once; ſo alſo here when as wee ſhall obſerv nature ſtirred up, and readie bent to anie kinde of evacuation by the mouth, ſtool, or other like; you ought not to uſe anie unction or friction oftner then once in a daie; yea, certainly it will bee better to intermit for ſom few daies. For thus *Maſſa* report's, that there was a certain man who almoſt waſted with a conſumption beeing continually afflicted with the moſt grievous pains of this diſeaſ, and reputed in a deſperate caſe by other Phyſicians, was notwithſtanding at length recovered by him, when as hee had annointed him thirtie ſeven times, putting ſom time between for the recoverie of his ſtrength.

In what places the bodie muſt bee annointed.

Where to begin the unction.

What it is that maketh the art of Phyſick conjectural.

Who muſt bee rubbed over once, who twice in a daie, and who but everie other daie.

*Lib. de vena ſect.*

I my

I my ſelf have obſerved others, who thus, by the interpoſition of one or two daies, beeing rubbed over ſom fifteen or ſeventeen times, have perfectly recovered. Wherefore you muſt take this courſin reſolved and weak bodies, yet in the *interim* muſt you have a care, that the frictions bee not too weak, and ſo few, that the morbifick cauſ may not bee touched to the quick: for in this kinde of diſeaſ nature doth not of it ſelf endeavour anie *criſis*, or excretion; it require's the auxiliarie forces of medicines, by whoſe aſſiſtance it may expell all the malignitie. Theſe are ſigns of ſuch a *criſis*, either at hand, or alreadie preſent, if the patient bee ſo reſtleſs, ſo loath all things, that hee cannot remain in one place either ſtanding or lying, hee can neither eat nor drink, if hee bee oppreſſed with a continual wearineſs, almoſt readie to ſwound, yet have a good and equal pulſ, and gripeings in his bellie afflict him with bloodie and viſcous dejections, until at length nature after one or two daies portion of the morbifick matter beeing ſpent, bee ſomwhat free'd, and all pains and ſymptoms ſo much abated, as the excretions have proceeded. But whereas medicines are not ſufficient in number or ſtrength, there follow's an imperfect *criſis*, which leav's behinde it ſom reliques of the morbifick matter, which like leaven do ſo by little and little infect the whole maſs of the humors, that oftimes after ten years ſpace, the diſeaſ riſeth as out of an ambuſh, or lurking-hole, and becom's far worſ then before. But wee muſt in like manner have a care leaſt theſe medicines, that are either given inwardly, or applied outwardly, bee not too ſtrong: for by cauſſing ſuch colliquation of the radical moiſture and ſolid parts, manie have been brought into an incureable conſumption. In others ſordid and putrid ulcers have thence ariſen in the mouth, which having eaten a great part of the pallate and tongue, have degenerated into a deadly *Cancer*. In others hereupon the tongue hath ſo ſwelled up, that it hath filled the whole capacitie of the mouth, ſo that it could not bee bended to anie part of the mouth for chawing, whereupon they have by little and little been famiſhed. In other ſom there hath been cauſſed ſo great colliquation of humors, that for a whole moneth after, tough and filthie ſlaver hath continually flowed out of their mouths. Other ſom have the muſcles of their jaws relaxed; others troubled with a convulſion, ſo that dureing the reſt of their lives they can ſcarce gape. Others, by loſing a portion of their jaw, have loſt ſom of their teeth. But you muſt not alwaies ſo long annoint and chafe the bodie, until a flux of the mouth or bellie appear. For you may finde ſundrie perſons, who, if you ſhould annoint or rub them to death, you cannot bring them to flux at the mouth; yet theſe will recover notwithſtanding, excretion beeing made either by inſenſible tranſpiration, or evacuation of urine, or ſom gentle flux of the bellie, either procured by art, or comming of it ſelf. In which caſe I have obſerved that manie have received much good by a purgeing decoction of *Guaicum*, adminiſtred according to the quantitie of the peccant humor, and given for ſom daies in the morning, adding thereto white wine, if the bodie abounded with tough and viſcid humors. Dyſenteries, or bloodie Fluxes cauſſed by unctions, may bee helped by glyſters, wherein much Hogſ-greaſ is diſſolved to rotund the acrimonie cauſſed by the medicine and humor which nouriſheth the Dyſenterie. Alſo new treacle diſſolved in new milk, is thought wonderfully to mitigate this ſymptom.

Nature is not ſufficiently able to expel the virulent matter.

Signs that the *criſis* is nigh.

Inconveniences following upon immoderate unctions.

For what perſons a purgeing decoction of *Guaicum* is good.

The cure of a Dyſenterie occaſioned by too ſtrong friction.

## CHAP. XIII.

*Of the third manner of cure, which is performed by cerates, and emplaſters, as ſubſtitutes of unctions.*

EOr that ſundrie by reaſon of the name abhor the uſe of friction, which is performed by the fore-mentioned ointments, therefore there is found out another manner of cure by cerates and emplaſters, as ſubſtitutes of Frictions, but that uſually is ſomwhat ſlower; for which purpoſe it is not needful onely to uſe the things which are deſcribed by *Vigo*, but you may alſo deviſe other, which are more or leſs anodyne, emollient, attenuating, diſcuſſing, or drying, according to the condition of the preſent diſeaſ, ſymptoms, humors and patient, never omitting *Hydrargyrum*, the onely antidote of this diſeaſ. Such emplaſters mitigate pains and knots, and reſolv all hardneſs, and are abſolutely verie effectual, for continually ſticking to the bodie, they continually operate. Wherfore they are of prime uſe in relapſes of this diſeaſ, or when the humors are thick and viſcous, or otherwiſe lie deep in the bodie, and verie difficult to root out. But for that they work more ſlowly oftimes, ſuch as uſe them are forced at length to uſe ſom frictions to ſtimulate nature, and cauſ the ſpeedier excretion. Yet in ſom whoſe bodies and humors have been fluid, either by nature or art, the applied emplaſters have in three daies ſpace procured evacuation ſufficient for the diſeaſ, ſo that if they had not been taken away, they would have cauſſed a colliquation, like that which wee lately mentioned in too violent friction. Wherefore you ſhall uſe the like diſcretion in takeing of theſe, as you uſe in your unctions and friction. In ſtead of *emp. de Vigo*, this following may bee fitly uſed. ℞. *maſſæ emp. de melil. & oxycrocei, an.* ℔ß. *argenti vivi extin.* ℥vi. *oleo laurino, & de ſpicâ, reducantur*

The cure by emplaſters more ſlow.

In what caſe they are chiefly uſeful.

The deſcription of an emplaſter.

*reducantur ad formam emplastri.* These plasters must bee equally spread upon lether, and laid upon the same places of the joints, as were formerly mentioned in the cure by frictions. Yet som there bee, who cover with the plaster all the arm, from the hand even to the shoulder, and all the leg from the top of the knee, even to the ends of the toes, which thing I do not disallow of, if so bee that the places of the joints bee covered over with a thicker plaster. They must bee left sticking there so long, until nature bee stirred up and provoked to caus excretion of the virulent humors. Yet if in the *interim* great itching shall arise in the parts, you may take them off so long until the parts shall bee fomented with a decoction of the flowers of camomile, melilote, red roses, and the like made in wine, to discuss that which caused the itching, and then you may lay them on again. Som, to hinder the riseing of anie itch, lay not the bare plaster to the part, but cover it over with sarcenet, so to keep it from sticking, and thus intercept the transpiration of the part, the caus of itching. They shall bee stronger or weaker, and lie to the part a longer or shorter space, as long as the indications, so often formerly mentioned, shall seem to require. The effects of emplasters are the same as of frictions; for they caus excretion, one while by insensible transpiration, otherwhiles by a *Diarrhœa*, or flux of the bellie; somtimes by urines, but most frequently (which *Crisis* is also most certain) by salivation. Sordid and virulent ulcers often breed in the mouth, tongue, pallate and gums by salivation, by reason of the acrimonie of the virulent humors adhering to the sides of the mouth: to hinder the growth of these, manie inject glysters made of emollient things, especially at the beginning of the salivation, so to draw downwards the humors forceibly flying up in greater quantitie then is fit, although the part it self may endure them.

What excretion best in this disease.

There are also som, who to the same end give a purgeing medicine at the verie time when as the humors are readie to move upwards, the which I think is not a safe cours. The cure of such ulcers is far different from the cure of others. For they ought by no means to bee repercussed or repelled, how inflamed soever they bee, but onely to bee mitigated by gargarisms, so onely to lessen the heat, and that by this frequent washing of the mouth, you may hinder the sticking or furring of viscid humors to such like ulcers. A decoction of barlie, cow's-milk warm, held and gargled in the mouth, the mucilages of the seeds of mallows, marsh-mallows, *psilium*, lettuce, line extracted in the water of barlie, mallows, and pellitorie of wall, are good for this purpose; for thus the ulcers becom more milde, and the tenacitie of the adherent humors is loosed. You must at the first beware of strong detergent medicines, for almost all such have acrimonie joined with them, which will encreas the pain, but chiefly in the state of the disease: for so, the ulcers gently cleansed by frequent gargling, would becom worse by the use of acrid things. Therefore it shall bee sufficient to make use of the fore-mentioned medicines, so to hinder the encreas of the filth, and inflammation of the ulcers; if so bee that such ulcers bee not too exceeding malign and burning. For if it shall happen either by the powerful efficacie of the applied plasters, or by the violence of nature in its motion of the ill humors upward, that such store of viscous and gross humors are carried to the mouth, that it want's little, but that the part it self is over-ruled by the morbifick matter, so that by the violence and continuance of the flux, the mouth and jaws becom so swelled, that a gangrene is to bee feared, by hindering the entrance of the spirits, and extinguishing of the native heat of these parts. In this case wee are forced to leav the proper cure for to withstand the accidents, and for this purpose wee use restrictive and repelling things, such as are barlie water, plantain, night-shade, knot-grass, shepherds-Purs, and the like, with syrup of roses, violets, quinces, berberies, pomegranates and the like; also such are the mucilages and decoctions of the seeds of lettuce, *psilium*, quinces, plantain, night-shade, water-lillies, wood-bine, &c. Also it is convenient to procure sweats by stoves, or the application of anie hot and drie things; for thus the humors which run forth of the vessels into all the surface of the bodie are diverted. But when as the cours of the humors running to the mouth, is beginning to stop, and the tumors and ulcers begin to lessen, then nothing hinder's, but that wee may use gently detergent things, as, *syrup. rosarum siccarum*, *mel rosatum*, *Diamoron*, *Dianucum*, and the like. But when it is time to drie the ulcers, they may bee lightly touched with alum-water, or with *aqua fortis*, such as Gold-smiths have used for the separation of metals. They may also frequently use drying gargarisms made with astriction of the waters of roses, plantain, night-shade, shepherd's-purs, knot-grass, and dog's-tongue, boiling therein *balaustia*; *ros. rub. myrtil. sumach. alumen. acacia*, *berber. gallæ malicor.* and the like. Dureing the time of fluxing or salivation you must diet and feed the patient with liquid meats, and those of good juice, and easie digestion, for that then hee can neither chaw, swallow, nor digest hard things. For nature wholly intent upon the excretion of the noxious and peccant humors, as also weakned by the bitterness of pain, watchings, and unquietness, and consequently a great resolution of the spirits, cannot insist powerfully upon the work of concoction. Therefore hee shall bee fed with rear new-laid eggs, caudles of the same, barlie-creams, cullesses made of a decoction of knuckles of veal, and a capon, and gellies, and with

To avoid the ulcers of the mouth. To cure them.

Restrictive and repelling gargarisms.

To drie the ulcers of the mouth.

Manner of diet when the mouth is ulcerated.

with theſe in ſmall quantitie, but frequently adminiſtred, alwaies gargling his mouth before hee eat. For his drink hee ſhall uſe a decoction of *Guaicum* aromatized with a little cinnamon; but if anie deſire that the drink ſhall becom nouriſhment, for that the patients cannot feed on more ſolid meats, you may give them old wine, claret and thin, mixed with ſom barlie-water. Som there are who ſteep ſom crums of pure manchet in the foreſaid wine, and then preſs it out, but yet ſo, that there may ſom part of the bread remain therein, which may make it more nouriſhing, and leſs ſharp or acrid. Others ſteep bread hot out of the oven, in wine, for the ſpace of a night, then they diſtil it all over in *balneo Mariæ*; the liquor which firſt com's over is more ſtrong and hot, but that which flow's out afterwards, more milde, and ſuch as the patient may uſe to mix with his wine without anie danger, for his better nouriſhment, and the recoverie of his ſtrength. To make their drink nouriſhing.

For to refreſh the ſpirits in fear of fainting, muskedine, hippocras, roſe-vineger, and the like, put to the noſe to ſmell to, will bee ſufficient, unleſs peradventure the patient ſhould naturally abhor ſuch things, for ſo they would rather deject the powers and ſpirits. In the *interim*, you muſt have care of the bellie, that you keep it open by gentle and emollient glyſters.

## CHAP. XIIII.

### *Of the fourth manner of cureing the* Lues Venerea.

SOm have deviſed a fourth manner of cureing the *Lues Venerea*, which is by *ſuffitus*, or fumigations. I do not much approov hereof, by reaſon of ſundrie malign ſymptoms which thence ariſe, for they infect and corrupt by their venemous contagion, the brain and lungs, by whom they are primarily and fully received, whence the patients dureing the reſidue of their lives have ſtinking breaths. Yea manie while they have been thus handled, have been taken hold of by a convulſion, and a trembling of their heads, hands, and legs, with a deafneſs, apoplexie, and laſtly, miſerable death, by reaſon of the malign vapors of ſulphur and quick-ſilver, whereof *cinnabaris* conſiſt's, drawn in by their mouth, noſe, and all the reſt of the bodie. Wherefore I can never approov the uſe of ſuch fumigations which are to bee received in fumes by the mouth and noſtrils for to work upon the whole bodie; yet I do not diſlike of that, which is undertaken for ſom one part onely, as to drie up ill-conditioned ulcers, which ſo affect it, that they cannot bee overcom by anie other means, or for to diſperſor digeſt knots, or to reſolv fixed pains, otherwiſe unmoveable. Theſe fumigations, by reaſon of the admixture of *argentum vivum*, have an attenuating, cutting, reſolving, and colliquating facultie. Thoſe who prepare theſe fumigations for the cure of the whole diſeaſ and bodie, take this courſ. They put the patient under a tent or canopie made cloſe on everie ſide, leſt anie thing ſhould expire, and they put in unto him a veſſel filled with hot coles, whereupon they plentifully throw *Cinnabaris*, that ſo they may on everie ſide enjoy the riſeing fume, juſt after the ſame manner as Farriers uſe to ſmoak their horſes for the glaunders: they repeat this everie day ſo long, until they begin to flux at the mouth. The principal matter or *baſis* of ſuch fumigations, as wee have alreadie noted, is *Cinnabaris* conſiſting of ſulphur and *argentum vivum* mixed together; there is added alſo, *radix ireos flor. thus, olibanum. myrrha, juncus odoratus, aſſa odorata, maſtiche, terebinthina, & theriaca*, all which have a facultie to reſolv and ſtrengthen the ſpirits, and nature, and correct the ſtinch and evil qualitie of the *argentum vivum*. There are alſo other fumigations made after another manner, but that alſo when as the *argentum vivum* is extinct, and as it were fix't after this manner; let ſom lead bee melted, & let there be poured or put thereto ſom *argentum vivum*, then let it all bee powdred, adding thereto antimonie, aloës, maſtich, copreſs, orpiment, and benjamin made into powder, and framed into Trochiſces with ſom turpentine. Or elſ, ℞ *cinnabaris*, ℥i. *ſtyracis rub. & calamitæ, nucis moſchat. an.* ℥iii. *benzoini*, ℥ß. *excipe terebinth. fiant trochiſci ponderis* ℥ii. for the fore-ſaid uſe. The *terebinthina* is added to incorporate the drie things, and the gums are added to yield matter to the fume. But virulent ulcers of the *Lues Venerea* ſhall not bee fumigated before they bee cleanſed; alſo this following fumigation is good. ℞ *cinnab.* ℥i. *benzoini, myrrhæ, ſtyracis, olibani, opopanacis, an.* ℥ß. *maſtiches, macis, thuris, an.* ℥ii. *excipiantur terebinthina, & fiat ſuffumigium.*

The hurt that follow's upon fumigations.

What fumigations good.

The common manner of uſing them.

The matter of them.

Trochiſces for fumigations.

## CHAP. XV.

### *The cure of the ſymptoms, or ſymptomatick affects of the* Lues Venerea: *and firſt, of the Ulcers of the Yard.*

SAllous and malign ulcers in this diſeaſ may grow all over the yard; but theſe are far more malign which ariſe on the prepuce, then thoſe that grow on the *Glans*, or nut of the yard. Now they are rebellious to the common medicines of ulcers which happen other-waies, and they are alſo ſubject to turn into a gangrene, ſo that ſundrie, who have not in time provided for themſelvs by the

The ulcers of the prepuce more malign then thoſe of the *Glans*.

the uſe of *argentum vivum*, are forced for their negligence to ſuffer the loſs of their *Glans*, and oftimes of their whole yard. Yet I am of opinion, that I think wee muſt begin the cure of all ulcers of the yard with the general remedies of ulcers. For all ulcers ariſing in theſe parts by reaſon of copulation, are not virulent. But when as wee ſhall finde that wee doe no good by this means, and that the diſeaſ notwithſtanding grow's worſ and worſ, then muſt wee com to make uſe of ſuch things as receiv *argentum vivum*, that by theſe wee may reſiſt the virulencie which is readie to diſperſ it ſelf over all the bodie, yet it is abſolutely neceſſarie that all theſe things bee endued with ſuch faculties as may retund the malign acrimonie of this venom, ſuch an one is this following *collyrium* of *Lanfranck*. ℞. *vini albi*, ℔i. *aq. roſ. & plan. ag.* an. quart. 1. *auripig.* ʒii. *viridis æris*, ʒi. *aloës, myrrhæ*, an. ℈ii. *terantur ſubtiliſſimè, & fiat collyrium.* Alſo theſe ulcers may bee profitably touched with mercurie-water, or *aqua fortis* which the Gold-ſmiths have uſed, or elſ mercurie in powder, or our *ægyptiacum*: but the falling away of the Eſchar ſhall bee procured with *baſilicon*, or freſh butter. Yet I think it not fit to uſe theſe acrid things without verie great caution, for fear of a gangrene, which eaſily happen's to this part. But if ſuch ulcers are ſo ſtubborn, that they will not yeild to theſe remedies, then muſt we com to the friction or unction of the groins, *perinæum*, and ulcers, with the ointments formerly preſcribed for the general friction. Alſo fumigations may bee made, as wee mentioned in the former chapter. For thus at length the malignitie of the virulent humor will bee overcom, and the callous hardneſs mollified; and laſtly, the ulcers themſelvs cleanſed, and beeing cleanſed, conſolidated. Somtimes after the perfect cure of ſuch ulcers, there will appear manifeſt ſigns of the *Lues Venerea* in manie, which ſhewed not themſelvs before, for that the virulencie flowed forth of the running ulcers, and now this vent beeing ſtopt, it flow's back into the bodie, and ſhew's ſigns thereof in other parts; and theſe men have need of a general unction.

Lanfranck's *collyrium.*

* This which by our Autor is here termed *Stranguria virulenta*, and in French *Chaudepiſſe*, is the ſame which by other Autors is uſually termed *Gonorrhœa virulenta*, and by us vulgarly in Engliſh, *The running of the reins.*

## CHAP. XVI.

*How a* Gonorrhœa *differeth from a * virulent Strangurie.*

EVen to this day verie manie have thought that the virulent Strangurie hath ſom affinitie with the *Gonorrhœa* of the Antients, but you ſhall underſtand by that which follow's, that they are much different. For a *Gonorrhœa* is an unvoluntarie effuſion of ſeed running from the whole bodie to the genitals, by reaſon of the reſolution and palſie of the retentive facultie of theſe parts, as it is delivered by *Galen, lib. de loc. affect.* This diſeaſ befalleth others by the collection of the blood and ſeminal matter by the veſſels of the whole bodie, which not turning into fat and good-fleſh, take's it courſ to the genitals; but on the contrarie, a virulent Strangurie is a running, or rather dropping out of the urinarie paſſage, of a yellowiſh, livid, bloodie, filthie *ſanies*, like to *pus*, or matter not well concocted, oftentimes fretting and exulcerating the paſſage with the acrimonie, and cauſſing a painful erection of the yard, and diſtenſion of all the genital parts. For in this erection there is cauſſed as it were a convulſive contraction of theſe parts. And hence it is that the patients complain, that they feel as it were a ſtring ſtretched ſtiff in that part, which draw's the yard as it were downwards. The cauſ hereof is a groſs and flatulent ſpirit, filling and diſtending by its plentie, the whole channel or hollow nerv; yea verily, the whole porous ſubſtance of the yard. If to theſe ſymptoms this bee added, that the urinarie paſſage bee exulcerated, a grievous pain afflict's the patient, whil'ſt hee make's water, for that the ulcers are irritated by the ſharp urine paſſing that way. Such a virulent ſtrangurie or running of the reins oftimes continueth for two or three years ſpace: but the *Gonorrhœa*, or running of the ſeed cannot endure ſo long, but that it will bring the bodie to an extreme and deadlie leanneſs, for that the matter of the ſeed is of the more benign and laudable portion of the blood, as you may perceiv by thoſe who have too immoderately uſed copulation but the ſpace of one night. For ſuch have their faces more lean and lank, and the reſt of their bodies enervated, languiſheth and becommeth dull. By this wee have delivered, it may bee perceived that the running of a virulent ſtrangurie, is not the running of a ſeminal humor, fit for generation of iſſue, but rather of a viſcous and acrid filth, which hath acquired a venenate malignitie by the corruption of the whole ſubſtance.

What a virulent ſtrangurie is.

The cauſ of the convulſive diſtenſion of the yard.

*Vid. Aut. definit. med. apud Galen.*

What kinde of matter floweth forth in a virulent ſtrangurie.

## CHAP. XVII.

*Of the cauſſes and differences of the ſcalding, or ſharpneſs of the urine.*

HE heat or ſcalding of the water, which is one kinde of the virulent ſtrangurie, ariſeth from ſom one of theſe three cauſſes; to wit, repletion, inanition, and contagion. That which proceed's from repletion, proceed's either from too great abundance of blood, or by a painful and tedious journie in the hot ſun, or

The cauſ of a particular repletion of the privie parts.

or by feeding upon hot, acrid, diuretick and flatulent meats cauſſing tenſion and heat in the urinarie parts, whence proceed's the inflammation of them and the genital parts, whence it happen's that not onely a ſeminal, but alſo much other moiſture may flow unto theſe parts, but principally to the *proſtatæ*, which are glandules ſituate at the roots, or beginning of the neck of the bladder, in which place the ſpermatick veſſels end; alſo abſtinence from venerie cauſſeth this plenitude in ſom who have uſually had to do with women, eſpecially the expulſive faculties of the ſeminal and urinarie parts beeing weak, ſo that they are not of themſelvs able to free themſelvs from this burden. For then the ſuppreſſed matter is corrupted, and by its acrimonie contracted, by an adventitious and putredinous heat, it cauſſeth heat and pain in the paſſage forth. The *proſtatæ* ſwelling with ſuch inflamed matter, in proceſs of time becom ulcerated, the abſceſs beeing broken. The purulent *ſanies* dropping and flowing hence alongſt the urinarie paſſage cauſſes ulcers by the acrimonie, which the urine falling upon, exaſperate's; whence ſharp pain, which alſo continueth for ſom ſhort time after makeing of water, and together therewith by reaſon of the inflammation, the pain's attraction, and the vaporous ſpirit's diſtenſion, the yard ſtand's, and is contracted with pain, as wee noted in the formed Chapter. But that which happen's through inanition, is acquired by the immoderate and unfit uſe of venerie, for hereby the oilie and radical moiſture of the fore-mentioned glandules is exhauſted, which waſted and ſpent, the urine cannot but bee troubleſom and ſharp by the way to the whole *urethra*. From which ſenſ of ſharp pain, the ſcalding of the urine hath its denomination. That which com's by contagion, is cauſſed by impure copulation with an unclean perſon, or with a woman, which ſom ſhort while before hath received the tainted ſeed of a virulent perſon, or elſ hath the whites, or her privities troubled with hidden and ſecret ulcers, or carrieth a virulent ſpirit ſhut up or hidden there, which heated and reſuſcitated by copulation, preſently infect's the whole bodie with the like contagion, no otherwiſe then the ſting of a Scorpion or *Phalangium*, by caſting a little poiſon into the skin, preſently infect's the whole bodie, the force of the poiſon ſpreading further then one would believ, ſo that the partie fall's down dead in a ſhort while after. Thus therefore the ſeminal humor contained in the *proſtatæ*, is corrupted by the tainture of the ill drawn thence by the yard, and the contagion infect's the part it ſelf; whence follow's an abſceſs, which caſting forth the virulencie by the urinarie paſſage, cauſſeth a virulent ſtrangurie; and the malign vapor carried up with ſom portion of the humor unto the entrails and principal parts, cauſ the *Lues Venerea*.

The cauſſes of the inanition of the genital parts.

The reaſon of a contagious ſtrangurie.

## CHAP. XVIII.

### *Prognoſticks in a virulent Strangurie.*

WEe ought not to bee negligent or careleſs in cureing this affect; for of it proceed pernicious accidents, as wee have formerly told you, and neglected, it becom's uncureable, ſo that ſom have it run out of their urinarie paſſage dureing their lives; oftimes to their former miſerie is added a ſuppreſſion of the urine, the *proſtatæ* and neck of the bladder beeing inflamed and unmeaſurably ſwelled. Copulation, and the uſe of acrid or flatulent meats increaſ this inflammation, and alſo together therewith cauſ an *Iſchuria*, or ſtoppage of the urine; they are worſ at the change of the Moon: certain death follow's upon ſuch a ſtoppage; as I obſerved in a certain man, who troubled for ten years ſpace with a virulent ſtrangurie, at length died by the ſtoppage of his water. Hee uſed to bee taken with a ſtopping of his urine, as often as hee uſed anie violent exerciſe, and then hee helped himſelf by putting up a ſilver Catheter, which for that purpoſe hee ſtill carried about him; it happened on a certain time, that hee could not thruſt it up into his bladder, wherefore hee ſent for mee, that I might help him to make water, for which purpoſe when I had uſed all my skill, it proved in vain: when hee was dead, and his bodie opened, his bladder was found full, and verie much diſtended with urine, but the *proſtatæ* preternaturally ſwelled, ulcerated, and full of matter reſembling that which formerly uſed to run out of his yard, whereby you may gather, that this virulencie flow's from the *proſtatæ*, which run's forth of the yard in a virulent ſtrangurie, and not from the reins, as manie have imagined. Certainly, a virulent ſtrangurie, if it bee of anie long continuance, is to bee judged a certain particular *Lues Venerea*, ſo that it cannot bee cured unleſs by frictions with *Hydrargyrum*. But the ulcers which poſſeſs the neck of the bladder are eaſily diſcerned from theſe which are in the bodie or capacitie thereof. For in the later the filth com's away as the patient make's water, and is found mixed with the urine, with certain ſtrings or membranous bodies comming forth in the urine: to theſe may bee added, the far greater ſtinch of this filth which iſſueth out of the capacitie of the bladder. Now muſt wee treat of the cure of both theſe diſeaſes, that is, the *Gonorrhœa* and virulent Strangurie; but firſt of the former.

A virulent ſtrangurie continue's with ſom dureing their lives.

An hiſtorie.

From what part the matter of a virulent ſtrangurie flow's.

## CHAP. XIX.

*The chief heads of cureing a* Gonorrhœa.

Diet.

LEt a Physician bee called, who may give direction for purgeing, bleeding and diet, if the affect proceed from a fulness and abundance of blood and seminal matter; all things shall bee shunned which breed more blood in the bodie, which increas seed, and stir to venerie. Wherefore hee must abstain from wine, unless it bee weak and astringent, and hee must not onely eschue familiaritie with women, but their verie pictures, and all things which may call them to his remembrance, especially if hee love them dearly; strong exercises do good, as the carrying of heavie burdens even until they sweat, swimming in cold water, little sleep, refrigerations of the loins and genital parts, by annointing them with *unguentum rosarum refrigerans Galeni & nutritum*, putting thereupon a double cloth steeped in oxycrate, and often renewed. But if the resolution or weakness of the retentive facultie of these parts bee the cause of this disease, contracted by too much use of venerie before they arrive at an age fit to perform such exercise; in this case strengthning and astringent things must both bee taken inwardly, and applied outwardly. But now I hasten to treat of the virulent Strangurie, which is more proper to my purpose.

For a strangurie occasioned by repletion.

For the decaie of the retentive facultie.

## CHAP. XX.

*The general cure both of the scalding of the water, and the virulent Strangurie.*

Diet.

WEe must diversly order the cure of this disease, according to the varietie of the causes and accidents thereof. First, care must bee had of the diet, and all such things shunned as inflame the blood, or cause windinesse; of which nature are all diuretick and flatulent things, as also strong and virulent exercises. Purgeing and bleeding are convenient, especially, if fulness cause the affect. Womens companies must bee shunned and thoughts of venereous matters; the patient ought not to lie upon a soft bed, but upon a quilt or matterice, and never, if hee can help it, upon his back: boiled meats are better then rosted, especially boil'd with sorrel, lettuce, purslain, cleansed barlie, and the four cold seeds beaten: for sauce, let him use none, unless the juice of an orange, pomegranate, or verjuice; let him shun wine, and in stead thereof use a decoction of barlie and liquorice, an *hydromel*, or *hydrosaccarum* with a little cinnamon, or that which is termed *Potus divinus*. In the morning let him sup of a barlie cream, wherein hath been boiled a *nodulus* of the four cold seeds beaten together with the seeds of white poppie; for thus it refrigerateth, mitigateth and cleanseth; also the syrups of marsh-mallows and maiden-hair are good. Also purgeing the bellie with half an ounce of *Cassia*, somtimes alone, otherwhiles with a dram or half a dram of Rubarb in powder put thereto, is good. And these following pills are also convenient. ℞. *massæ pilul. fine quibus* ℥i. *rhei electi* ʒß. *caphuræ gr.* iiii. *cum terebinthinâ formentur pilulæ*; let them bee taken after the first sleep. Venice turpentine alone, or adding thereto som Rubarb in powder, with oil of sweet almonds newly drawn without fire, or som syrup of maiden-hair, is a singular medicine in this case, for it hath an excellent lenitive and cleansing facultie, as also to help forwards the expulsive facultie, to cast forth the virulent matter contained in the *prostatæ*. You may by the bitternes perceiv how it resist's putrefaction, and you may gather how it perform's its office in the reins and urinarie parts, by the smell it leav's in the urine after the use thereof. But if there bee anie who cannot take it in form of a bole, you may easily make it potable, by dissolving it in a mortar with the yolk of an egg, and some white wine, as I learned of a certain Apothecarie, who kept it as a great secret. If the disease com by inanition or emptines, it shall bee helped by fattie injections, oilie and emollient potions, and inwardly takeing and applying these things which have the like facultie, and shunning these things which caused the disease. How to cure that which happen's by contagion, or unpure copulation, it shall bee abundantly shewed in the ensuing Chapter.

Pills.

The force of Venice-turpentine in this disease.

How to bee made potable.

## CHAP. XXI.

*The proper cure of a virulent Strangurie.*

An injection to stay inflammation.

FIrst, wee must begin with the mitigation of pain, and staying the inflammation, which shall bee performed by makeing injection into the *urethra*, with this following decoction warm. ℞. *sem. psilii, lactucæ, papav. albi, plantag. cydon. lini, hyoscyami albi, an.* ℥ii. *detrahantur mucores in aquis solani & rosar. ad quantitatem sufficientem, adde trochisc. alborum Rhasis camphoratorum in pollinem redactorum,* ℥i. *misce simul, & fiat injectio frequens.* For this becaus it hath a refrigerateing facultie, will help the inflamma-

inflammation, mitigate pain, and by the mucilaginous facultie lenifie the roughneſs of the *urethra*, and defend it by covering it with the ſlimie ſubſtance, againſt the acrimonie of the urine and virulent humors. In ſtead hereof you may uſe cow's milk newly milked, or warmed at the fire. Milk doth not onely conduce hereto, beeing thus injected, but alſo drunk, for it hath a refrigerateing and cleanſing facultie, and by the ſubtiltie of the parts it quickly arrive's at the urinarie paſſages. Furthermore, it will bee good to annoint with *cerat. refriger. Galeni addita camphora*, or with *ceratum centalinum*, *ung. comitiſſæ*, or *nutritum*, upon the region of the kidnies, loins and *perinæum*, as alſo to annoint the cods and yard. But before you uſe the foreſaid ointments or the like, let them bee melted over the fire, but have a care that you make them not too hot, leaſt they ſhould loſe their refrigerateing qualitie, which is the thing wee chiefly deſire in them. Haveing uſed the foreſaid ointment, it will bee convenient to applie thereupon ſom linnen clothes moiſtened in oxycrate, compoſed *ex aquis plantaginis, ſolani, ſempervivi, roſarum*, and the like. If the patient bee tormented with intolerable pain in makeing water, and alſo ſom ſmall time after, as it commonly commeth to paſs, I would wiſh him that hee ſhould make water, putting his yard into a chamber-pot filled with milk or water warmed. The pain by this means beeing aſſwaged, wee muſt com to the cleanſing of the ulcers by this or the like injection: ℞. *hydromelitis ſympt.* ℥iv. *ſyr. de roſis ſiccis, & de abſinth. an.* ℥ß. *fiat injectio.* But if there bee need of more powerful deterſion, you may ſafely add, as I have frequently tried, a little *ægyptiacum*. I have alſo found this following decoction to bee verie good for this purpoſe. ℞. *vini albi odoriferi,* ℔ß. *aquar. plantag. & roſ. an.* ℥ii. *auripigmenti,* ℥ß. *viridis æris,* ℈i. *aloës opt.* ℥ß. *pulveriſentur pulveriſanda, & bulliant ſimul.* Keep the decoction for to make injection withall. You may increaſ or diminiſh the quantitie and force of the ingredients entring into this compoſition, as the patient and diſeaſ ſhall ſeem to require. The ulcers beeing thus cleanſed, wee muſt haſten to drie them, ſo that wee may at length cicatrize them. This may bee don by drying up the ſuperfluous moiſture, and ſtrengthning the parts that are moiſtned and relaxed by the continual defluxion, for which purpoſe this following decoction is verie profitable. ℞. *aq. fabrorum,* ℔i. *pſidiarum, balauſt. nucum cupreſ. conquaſſatorum, an.* ℥iß. *ſemin. ſumach. & berber. an.* ℥ii. *ſyrup. roſar. & de abſinth. an.* ℥i. *fiat decoctio.* You may keep it for an injection to bee often injected into the *urethra* with a ſyringe, ſo long as that there ſhall no matter or filth flow over thereat, for then there is certain hope of the cure.

The faculties of milk againſt a virulent ſtrangurie.

How to make water without pain.

Detergent injections.

How the cleanſed ulcers may bee dried.

## CHAP. XXII.

*Of Caruncles, or fleſhie excreſcences which ſomtimes happen to grow in the* Urethra, *by the heat or ſcalding of the urine.*

A Sharp humor which flow's from the Glandules, termed *Proſtatæ*, and continually run's alongſt the urinarie paſſage, in ſom places by the way it fret's & exulcerate's by the acrimonie the *urethra* in men, but the neck of the womb in women. In theſe, as alſo is uſual in other ulcers, there ſomtimes grow's up a ſuperflous fleſh, which oftimes hinder's the caſting or comming forth of the ſeed and urine by their appropriate and common paſſage, whence manie miſchiefs ariſe; whence it is that ſuch ulcers as have caruncles growing upon them muſt bee diligently cured. But firſt wee muſt know whether they bee new or old. For the later are more difficultly to bee cured then the former, becauſ the caruncles that grow upon them becom callous and hard, beeing oftimes cicatrized. Wee know that there are caruncles, if the *Catheter* cannot freely paſs alongſt the paſſage of the urine, but finde's ſo manie ſtops in the way, as it meet's with caruncles that ſtop the paſſage; if the patient can hardly make water, or if his water rnn in a verie ſmall ſtream, or two ſtreams, or crookedly, or onely by drop and drop, with ſuch tormenting pain, that hee is readie to let go his excrements, yea and oftimes doth ſo, after the ſame manner as ſuch as are troubled with the ſtone in the bladder. After makeing water, as alſo after copulation, ſom portion of the urine and ſeed ſtaie's at the rough places of the caruncles, ſo that the patient is forced to preſs his yard, to preſs forth ſuch reliques. Somtimes the urine is wholly ſtopped, whence proceed's ſuch diſtenſion of the bladder, that it cauſſeth inflammation, and the urine flowing back into the bodie, haſten's the death of the patient. Yet ſomtimes the urine thus ſuppreſt, ſweat's forth preternaturally in ſundrie places, as at the fundament, *perinæum*, cod, yard, groins. As ſoon as wee, by anie of the fore-mentioned ſigns, ſhall ſuſpect that there is a caruncle about to grow, it is expedient forthwith to uſe means for the cure thereof; for a caruncle from a verie little beginning doth in a ſhort time grow ſo big, that at the length it becom's incureable: verily, you may eaſily gueſs at the difficultie of the cure by that wee have formerly delivered of the eſſence hereof, beſides, medicines can verie hardly arrive thereat. The fitteſt ſeaſon for the undertakeing hereof is the Spring, and the next thereto is Winter; yet if it bee verie troubleſom, you muſt delaie no time. Whileſt the cure is in hand, the patient ought wholly to abſtain from venerie, for by the uſe thereof, the kidnies, ſpermatick veſſels, *proſtatæ*, and the whole yard,

How caruncles com to grow upon the ulcers of the genital parts.

Callous caruncles hard to cure.

Signs.

The ſuppreſt urine com's forth whereas it can get vent.

The fitteſt time for the cure.

Why venerie muſt bee eſchued.

yard, ſwell up and wax hot, and conſequently draw to them from the neighboring and upper parts, whence abundance of excrements in the affected parts, much hindering the cure. You muſt beware of acrid and corrodeing things in the uſe of detergent injections, for that thus the *urethra* beeing endued with moſt exquiſite ſenſ, may bee eaſily offended, whence might enſue manie ill accidents. Neither muſt wee bee frighted, if at ſom times wee ſee blood flow forth of ſecret or hidden caruncles. For this help's to ſhorten the cure, becauſ the diſeaſ is hindered from growth, by takeing away portion of the conjunct matter, the part alſo it ſelf is eaſed from the oppreſſing burden, for the material cauſ of caruncles is ſuperfluous blood. Wherefore unleſs ſuch bleeding happen of it ſelf, it is not amiſs to procure it by thruſting in a *Catheter* ſomwhat hard, yet with good advice. If the caruncles bee inveterate, arid callous, then muſt they bee mollified by fomentations, ointments, cataplaſms, plaſters, and fumigations; you may thus make a fomentation. ℞. *rad.alth.& lilior.alb.an.*℥iv. *rad.bryoniæ, & fœnic.an.*℥iß. *fol malvar. violarum, parietar. & mercur.an.* m.ß. *ſem. lini. fœnugr.an.* ℥ß. *caricas ping.*nu.xii. *florum chamœm.& melil.an.*p.i. *contundantur contundenda, incidenda incidantur, bulliant omnia in aquâ communi*: make a fomentation, and applie it with ſoft ſponges. Of the maſs of the ſtrained-out things, you may make a cataplaſm after this manner. ℞. *prædicta materialia, terantur, & trajiciantur, adde axungiæ porci, unguenti baſiliconis, an.*℥ii. *fiat cataplaſma*: let it bee applied preſently after the fomentation. You may uſe this following liniment whil'ſt the cataplaſm is providing. ℞. *unguenti alth.& agrippæ an.*℥iß. *œſipi humidæ, & axung. human.an.*℥i. *butyri recentis, olei lilior.& chamœm. an.*℥vi. *liquefiant ſimul, addendo aquæ vitæ* ℥i. *fiat linimentum*: let it bee applied outwardly upon the part wherein the caruncles are. For the ſame purpoſe plaſters ſhall bee applied, which may bee diverſified, and fitted as you ſhall think good; yet *Emplaſtrum de Vigo* truly made, exceedeth all the reſt in a mollifying faculty, and in waſteing ſuch callous hardneſs. The following fumigation is alſo good for the ſame purpoſe; take ſom pieces of a mill-ſtone (for this wee uſe in ſtead of the *pyrites* mentioned by the Antients) or elſ ſome bricks of large ſize, after they are heated hot in the fire, let them bee put into a pan, and ſet under a cloſe ſtool, then cauſ the patient to ſit thereon, as if hee were going to ſtool, then pour upon the hot ſtones equal parts of verie ſharp vineger, and verie good *aqua vitæ*, and caſting clothes about him, that nothing may exhale in vain: let him receiv the aſcending vapor at his fundament, *perinæum, ſcrotum*, and *urethra*. Moreover, that this medicine may work the better effect, you may put the patient naked into the barrel noted with this letter A. ſo that hee may ſit upon a ſeat or board perforated on that part, whereas his genitals are, then place the pan, holding the hot ſtones between his legs, then preſently ſprinkle the ſtones with the fore-mentioned liquor, by the door marked with the letter B. Thus the patient ſhall eaſily receiv the fume that exhale's therefrom, and none thereof bee loſt, hee covering and vailing himſelf on everie ſide. Such a fumigation in *Galen*'s opinion, hath a facultie to penetrate, cut, reſolv, ſoften and digeſt ſcirrhous hardneſſes.

The paticular cure.

A fomentation

A cataplaſm.

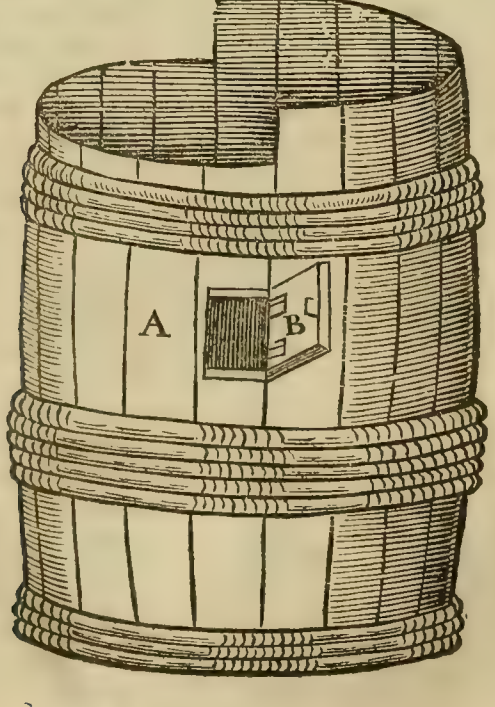
A liniment.

*Vigo*'s emplaſter effectual to ſoften a Caruncle.

A *ſuffumigium.*

*Ad Glauc.lib.2. cap.5.*

*A Barrel fitted to receiv the fume in.*




CHAP.

## CHAP. XXIII.

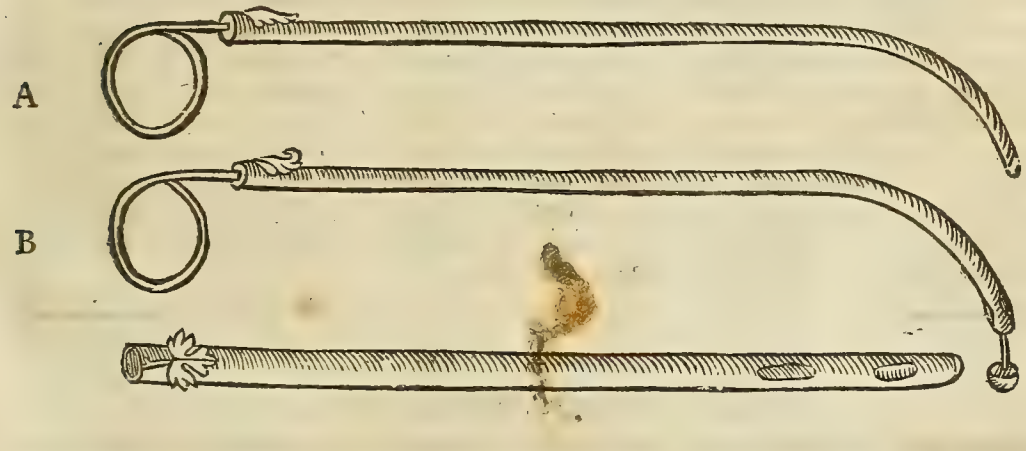
*What other remedies ſhall bee uſed to Caruncles occaſioned by the* Lues Venerea.

BUt if you ſuſpect that theſe Caruncles com or are occaſioned by a virulent humor, or the malignitie of the *Lues venerea*, it is meet that the patient obſerv ſuch a diet as uſually is preſcribed to ſuch as are troubled with the *Lues Venerea*; let him uſe a decoction of *Guaicum*, and let the *perinæum* and the whole yard bee annointed with ointment made for the *Lues Venerea*; otherwiſe the Surgeon will loſe his labor. In the interim, whil'ſt hee ſhall ſweat in his bed, hee ſhall bee wiſhed to hold between his legs a ſtone-bottle filled with hot water, or elſ a hot brick wrapped in linnen cloaths, moiſtened in vineger and *aqua vitæ*; for thus the heat and vapor will aſſcend to the genitals, which, together with the help of the applied ointment, will diſſolv the matter of the Caruncles, and beeing thus ſoftened, they muſt bee conſumed with convenient medicines. Wherefore firſt if they becom callous, or cicatrized (which you may ſuſpect if they caſt forth no excrementitious humiditie) they ſhall bee exaſperated, excoriated and torn with a leaden *Catheter* haveing a rough button at the end like a round file. Hee ſhall ſo long uſe the *Catheter* put into the *Urethra*, thruſting it up and down the ſame way ſo long and often as hee ſhall think fit for the breaking and tearing the Caruncles, hee ſhall permit them thus torn to bleed freely, ſo to eaſe the affected part. You may alſo for the ſame purpoſe put into the *Urethra* the *Catheter* marked with this letter B; whereinto putting a ſilver wier ſharp at the upper end, that by often thruſting it in and out it may wear and make plain the reſiſting Caruncles. Verily, by this means I have helped manie much perplexed with the fearful danger of this diſeaſe. Som better like of the *Catheter* marked with this letter A, beeing thus uſed: it is thruſt into the *Urethra* with the prominent cutting ſides downwards, and then preſſing the yard on the outſide cloſe with your hand to the *Catheter* in the place where the Caruncles are, it is drawn forth again.

Particular defaults of the *Lues Venerea* not to bee cured unleſs by the general remedie of the virulencie.

Caruncles, if callous, muſt firſt bee ſoftned.

*Catheters fit to wear aſunder, or tear Caruncles.*




A *ſheweth the* Catheter *with the inſerted ſilver wier, but not hanging forth thereat.*
B *ſheweth the* Catheter *with the inſerted ſilver wiar hanging forth at the end.*

The Caruncle thus torn ſhall bee ſtrowed over with the following powder, beeing verie effectual to waſte ard conſume all Caruncles of the privities without much pain. ℞. *herb. ſabin. in umbrâ exſiccat.* ʒii. *ocræ, antimon. tuth. præparat. an.* ʒß. *fiat pulv. ſubtiliſſimus*, let it bee applied in the following manner. Put the powder into the pipe or *Catheter* haveing holes in the ſides thereof, the which is the lowermoſt of the laſt deſcribed. Then put the *Catheter* into the urinarie paſſage until the ſlit or openneſs of the ſide com to the Caruncle, then into the hollowneſs of the *Catheter* put a ſilver wier, wrapped about the end with a little linnen rag, which as it is thruſt up, will alſo thruſt up the powder therewith, until it ſhall com to the ſlit againſt the caruncle, then will it adhere to the caruncle, bloodie, by reaſon of the late attrition. Then ſhall you draw forth the *Catheter*, firſt twineing it about, that ſo it may not ſcrape off the powder again. If intolerable pain hereupon happen, it ſhall bee aſſwaged, and the inflammation reſtrained by the following injection. ℞. *ſuccorum portulacæ, plantag. ſolani, & ſempervivi, an.* ʒß. *album ovorum*, nu. vi. *agitentur diu in mortario plumbeo*; let it bee injected warm into the *urethra* with a ſyringe. In ſtead hereof you may alſo make uſe of another injection, which is formerly preſcribed. Neither will it bee unprofitable to applie repercuſſives to the genitals, to hinder pain and inflammation. You may alſo uſe other medicines, haveing a facultie to conſume the Caruncle, amongſt which theſe following are excellent.

A powder to waſte Caruncles.

How to applie it.

An injection to hinder inflammation.

An emplaſter uſed by the Surgeons of *Mountpelier* for Caruncles.

cellent. ℞. *viridis æris, auripigmenti, vitriol. Rom. aluminis roch. an.* ℥ii. *infundantur omnia in acet. acerrimo, atque inter duo marmora in pollinem redigantur:* then let it bee expoſed to the ſummer's ſun, and dried, again infuſed in ſharp vineger, and then as before ground upon a marble, ſo that you finde nothing ſharp with your fingers; laſtly, let it bee oppoſed to the ſun until it may bee made into moſt ſubtil powder, and all the acrimonie bee vaniſhed, which will bee commonly in eight daies ſpace. Then, ℞. *ol. roſat.* ℥iv. *lythargyr.* ℥ii. *coquantur ad ignem, quouſque coïerint in emplaſt. ſolidæ conſiſtentiæ, ab igne tum ſemotis, adde pulv. prædict.* ℥ii. let them bee mixed with a ſpatula, and put it upon the fire until it com to ſo hard a conſiſtence, that it will ſtick faſt to a wax candle, or lead wier, ſo that it may not com off by handling with your hands. The Surgeons of *Montpelier* uſe this medicine: This following is another, ℞. *tuthiæ præparat.* ℥vi. *antimonii,* ℥iii. *trochiſc. alborum, Rhaſ. camphorat.* ℥i. *corticis granati, aluminis uſti, an.* ℥iß. *ſpongiæ uſtæ,* ℈ii. let them bee all made iuto powder: then, ℞. *ung. diapompholigos, & alb. Rhaſis, an.* ℥ii. *miſceantur cum prædictis pulveribus in mortario plumbeo, & diu agitentur:*

Another emplaſter.

How to applie it.

let a verie fine rag bee ſpread over with this ointment, and wrapped about a wax candle, and ſo thruſt into the *Urethra*, and then draw forth the candle by twineing it a contrarie way; ſo let the end of the rag hang out of the yard, ſo to pluck ir forth again, when as you ſhall think it hath don what it can to the Caruncle, which is, when it hath covered it with the medicine with which it was ſpread. Som alſo make wax candles with a ſlender, but ſtiff wick, whoſe end, which is to bee put to wear and conſume the Caruncle, is compoſed of the following medicine. ℞. *Emplaſtri nigri, vel diathylonis irea i,* ℥ii. *pulv. ſabinæ, ocræ, vitriol Rom. calcin. pul. mer. an.* ℥ß. *amnia liqueſcant ſimul ad dictum uſum.* Whil'ſt the cure ſhall bee in hand, by theſe following medicins; Let the patient bee careful that hee ſo ſhake hit yard after makeing water, that hee may ſhake forth all the reliques of the urine which may chance to ſtop at the Caruncles; for if but one drop ſhould ſtay there, it would bee ſufficient to ſpoil the whole operation of the applied medicines. After that the Caruncle ſhall bee worn away and wholly conſumed by the deſcribed medicines, which you may know by the urine flowing forth freely, and in a full ſtream, and by thruſting up a *Catheter* into the bladder without anie ſtoppage; then it remain's that the ulcers bee dried and cicatrized; for which purpoſe the following injection is verie powerful and effectual, and without anie acrimonie. ℞. *aq. fabrorum,* ℔ß. ſß. *nuc. cupreſ. gallar. cort. granat. an.* ℥iß. *alum. roch.* ℥ß. *bulliant omnia ſimul ſecund. art.* ſo make a decoction for an injection, which you ſhall uſe ſo long, until no excrementitious humiditie diſtill out of the yard. The following powder drie's more powerfully, and conſequently haſten's forwards cicatrization, and it is alſo without acrimonie. ℞. *lapidem calamin. lotum, teſtas ovorum uſtas, corallum rubrum, corticem granat. comminue omnia in pollinem*; let this powder be uſed to the ulcers, with a wax candle joined to ſom *unguentum deſiccativum rubrum*, or ſom ſuch like thing. Alſo ſtrings or rods of lead thruſt into the *urethra* as thick as the paſſage will ſuffer, even to the ulcers, beeing firſt beſmeared with quickſilver, and kept in daie and night as long as the patient can endure, are good to bee uſed. For they drie by their touch and cicatrize, they dilate the urinarie paſſage without pain, and laſtly hinder the ſides of the ulcers from corrupting one another.

A caution in makeing water.

Signs that the Caruncle is worn away.

An epulotick injection.

Quick-ſilver by drying cauſeth cicatrization.

## CHAP. XXIV.

### *Of venereal* Buboes, *or ſwellings in the Groins.*

The efficient and material cauſes of venereous Bubo's.

THe virulencie of the *Lues Venerea* is ſomtimes communicated to the Liver, which if it have a powerful expulſive facultie, it expell's it into the groins, as the proper emunctories thereof, whence proceed venereal Buboes. The matter of theſe for the moſt part is abundance of cold, tough, and viſcous humors, as you may gather by the hardneſs and whiteneſs of the tumor, the pravitie of the pain, and contumacie of cureing; which alſo is another reaſon, beſides theſe that wee formerly mentioned, why the virulencie of this diſeaſ may bee thought commonly to faſten it ſelf in a phlegmatick humor. Yet ſomtimes venereal Buboes proceed from a hot, acrid and cholerick humor, aſſociated with great pain and heat, and which thereupon often degenerate into virulent and corroding ulcers. Som venereous Buboes are ſuch conjoined accidents of the *Lues Venerea*, that they foretel it; ſuch are theſe which for a ſmall while ſhew a manifeſt tumor, and ſuddenly, without anie manifeſt occaſion hide themſelvs again, and return back to the noble parts. Others are diſtinct from the *Lues Venerea* though they have a ſimilitude of eſſence and matter therewith, and which therefore may bee healed, the *Lues Venerea* yet remaining uncured. Such are theſe which are uſually ſeen, and which therefore compared with the former, may bee termed ſimple and not implicit. For the cure, you muſt not uſe diſcuſſing medicines, leſt reſolving the more ſubtil part, the groſſer dregs becom impact and concrete there; but much leſs muſt wee uſe repercuſſives, for that the matter is virulent. Wherefore onely attractive and ſuppurateing medicines are here to bee uſed, agreeable to the humor predominant and cauſing the tumor, as more hot things in œdematous and ſcirrhous tumors, then in thoſe which reſemble the nature of a *phlegmon* or *eryſipelas*: the indica-

What Bubo's foretel the *Lues venerea*

tion

tion taken from the raritie and denſitie of bodies inſinuate's the ſame varietie. The applying of cupping glaſſes is verie effectual to draw it forth. But when as it is drawn forth, you ſhall forthwith applie on emplaſtick medicine, and then you ſhall com to ſuppuratives. When the tumor is ripe it ſhall bee opened with a potential cauterie, if it peoceed from a cold cauſ; for by the induceing of heat the reſidue of the crude matter is more eaſily concocted; beſides when as an ulcer of this kinde is opened, the matter will bee more eaſily evacuated, neither ſhall it bee fit to uſe anie tent, but onely to applie pledgets. The reſidue of the cure ſhall bee performed by detergent medicines, and then if need require, the patient ſhall bee let blood, and the humors evacacuated by a purgeing medicine, but not before the perfect maturitie thereof.

Cupping.

A potential Cauterie.

## CHAP. XXV.

*Of the* Exoſtoſis, *bunches or knots growing upon the bones by reaſon of the* Lues Venerea.

HArd tumors, *Exoſtoſes* and knots have their matter from thick and tough phlegm, which cannot bee diſſolved, unleſs by hot medicines, which have a mollifying and diſſolving facultie. For which purpoſe, beſides thoſe medicines which uſually are applied to ſcirrhous humors, you muſt alſo make uſe of *arg. viv.* commonly after this manner. ℞. *empl. filii Zach. & Ceronei, an* ℥iii. *euphorb.* ℥ß. *emplaſt. de vigo,* ℥ii. *cerat. æſip. deſcript. Philagr.* ℥i. *argent. vivi extinct.* ℥vi. *fiat emplaſtrum.* Spread it upon leather for your uſe. In the mean ſpace let the patient obſerv a ſpareing diet; for thus hee ſhall bee helped, if ſo bee that the ſubſtance of the bones bee yet unperiſhed. For if it bee putrified and rotten, then deſcribed medicines are of no uſe, but you muſt of neceſſitie lay bare the bone, either by inciſion, or elſ by an actual or potential cauterie; but I had rather do it with an actual, for that it extract's the virulencie impact in the bones, as alſo it haſten's the abſceſs, or falling away of the corrupted bone. It ſhall bee of a convenient figure to cauterize the bone, as round, ſquare, or long. I uſually, before the application of ſuch a Cauſtick, firſt divide the fleſh that lie's over it with an inciſion-knife, that ſo the pain may bee the leſs, becauſ the fleſh cannot burn't through but in a long time, by which the fire may come to the bone. But it will not bee amiſs, before wee treat of this art, firſt to conſider the nature of the rottenneſs of the bones.

The matter of knots and virulent *Tophi.*

An emplaſter againſt the bunching out of the bones.

## CHAP. XXVI.

*Why the bones becom rotten, and by what ſigns it may bee perceived.*

THat ſolution of Coutinuitie which is in the bones, is called by *Galen, Catagina.* This uſually is the cauſ of rottenneſs; for, bones that are grated, bruiſed, rent, perforated, broken, luxated, inflamed and deſpoiled of the fleſh and skin are eaſily corrupted; for diſpoiled of their covering, they are altered by the appulſ of the air, wch they formerly never felt, whence alſo their blood & proper nouriſhment is dried up & exhauſted. Beſides alſo, the *ſanies* running down by reaſon of wounds & old ulcers, in proceſs of time faſten's it ſelf into their ſubſtance, and putrefie's by little and little; this putrefaction is encreaſed and cauſed by the too much uſe of oilie and fattie medicines, as moiſt and ſuppurate things; for hence the ulcer becommeth more filthie and malign, the fleſh of the neighboring parts groweth hot, is turned into *pus*, which preſently falling upon the bone lying under it, inflame's it. Laſtly, the bones are ſubject to the ſame diſeaſes, as the fleſh that lieth under them is; beſides alſo according to *Galen*, the beginning of inflammation oftimes proceed's from the bones; but they beat not, becauſ, according to the opinion of the ancients, pulſation is a dolorifick motion of the Arteries, but the bones want ſenſ. Which verily I cannot denie, but alſo wee muſt confeſs that the membrane that encompaſſeth them, and the arteries that enter into their bodie, are endued with moſt exquiſite ſenſ. Wherefore the arteries compreſſed and waxing hot by reaſon of the inflamed bone, cauſa ſenſ of pain in the *perioſtium*, ſo that the patients complain of a dull and deep pain, as it were ſunk into the ſubſtance of the bones. The rottenneſs or corruption is oftimes manifeſt to the eie, as when the bone is lai'd bare, for then it varieth from the natural color, and becom's livid, yellowiſh or black. Otherwiſe you may perceiv it by touch, as by ſearching it with a probe, as when you meet with anie inequalitie or roughneſs, or when but gently touching it, your *probe* run's into the ſubſtance of the bone as into rotten wood; for a bone is naturally hard, but beeing rotten, becom's ſoft. Yet hardneſs is not an infallible ſign of a ſound bone. For I have ſeen rotten and bared bones, to have ſomtimes grown ſo hard, by the appulſ of the air, that a Trepan could not, without a ſtrong endeavor, enter them. Alſo the rottenneſs of the bone is known by the condition of the filth which flow's forth of the ulcer, for it is not onely more thin and liquid, but alſo more ſtinking. Furthermore, ſuch ulcers have a ſoft, looſ and waterie fleſh; beſides alſo, they are untoward and rebellious to ſarcotick

*Gal. meth. 6.*

The frequent cauſ of the rottenenſs of bones.

*Hip. lib. de ulc. fract.*

*Gal. lib. de tum. cont. nat.*

Signs of the rottenneſs.

Hardneſs is no infallible ſign of ſound bones.

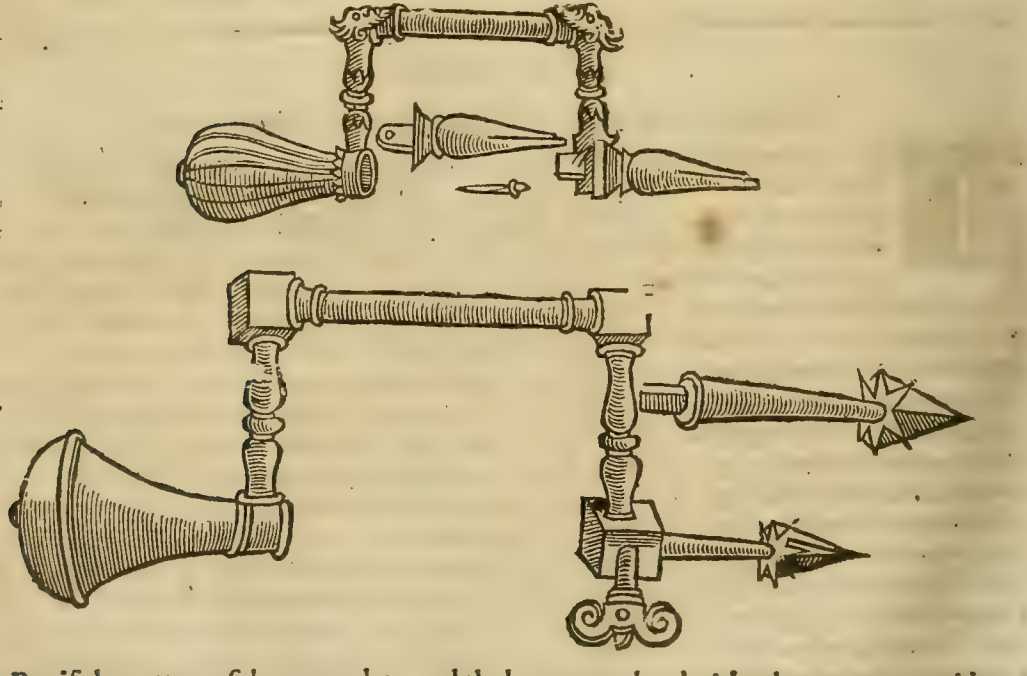
ſarcotick and epulotick medicines; to which if they chance to yeeld and bee cicatrized, yet within a ſhort while after the ſcar will relent of its own accord, for that nature, deſtitute of the firm and ſound foundation of the bones, cannot build up a laudable and conſtant fleſh. Neither is it ſufficient that the Surgeon know certainly that the bone is rotten and corrupt, it is furthermore fit hee know, whether this corruption bee ſuperficiarie, or pierce deep into the ſubſtance of the bone, that hee may know how much of the bone muſt bee ſcaled. For ſcaleing is the onely cure of that which is corrupted; now it is ſcaled by that which drie's excedingly, & draw's forth all the humiditie, aſwell the excrementitious, the autor of the rotenneſs, as the alimentarie. For thus it remain's without blood and nouriſhment, and conſequently life alſo; whence it muſt of neceſſitie ſcale or fall off, beeing deſtitute of the glue or moiſture which joined it to the ſound parts in vicinitie and communion of life, like as leavs which fall away from the trees, the humiditie beeing exhauſted, by which, as by glue, they adhered to the boughs. For this purpoſe Catagmatick powders are prepared to amend the corruption which is onely ſuperficiarie. ℞. *pul. aloës, cretæ combuſtæ, pompholygos, an.* ℥ii. *ireos flor. ariſtoloch. rot. myrrh. ceruſſæ, an.* ℥i. *pul. oſteor. combuſt.* ℥ß. *terantur ſubtiliſſ. fiat pulvis*; let it bee applied either alone by it ſelf, or elſ with honie and a little *aquæ vitæ*. Alſo the followiug emplaſter beeing applied, ſtir'sup nature to the excluſion of the broken bones, and cleanſeth the ulcers from the more groſs and viſcid *ſanies*. ℞. *cer. nov. reſ. pini, gum. ammon. & elemi, an.* ℥vi. *tereb.* ℥iii. *pul. maſtich. myrrh. an.* ℥ß. *ariſtol. rot. ireos flor. aloës, opopan. euphorb. an.* ℥i. *olei roſati quantum ſufficit, fiat emplaſt. ſecundum artem. Euphorbium*, according to *Dioſcorides* take's off the ſcales of bones in one daie. Hereto alſo conduceth *Emp. de betonicâ*. Or, ℞. *olei caryophyl.* ℥ß. *camph.* ℥ii. *miſceantur ſimul in mortario, & utere*. But if that part of the bone which is corrupt cannot thus bee taken away, then muſt you uſe the ſcaleing Trepans and Scrapers deſcribed formerly in wounds of the head; eſpecially if anie more great or ſolid bone bee foul. Furthermore the here-deſcribed Trepan will bee good to perforate the rotten bone in manie places where it is corrupted, until, as it were, a certain bloodie moiſture iſſue forth at the holes; for thus it more freely enjoie's the air, and alſo the force of the medicines admitted by theſe holes work's more powerfully.

The cure of a rotten bone.

A catagmatick powder.

A deſquamatorie or ſcaleing plaſter. *Dioſc. lib. 3. cap.* 78.

*A Trepan with two triangular bits and a pin to hold them in the ſtock: as alſo another Trepan haveing four-ſquare and ſix-quare bits convenient for to bee uſed in the rottenneſs of greater bones.*



But if the rottenneſs bee more deep, and the bone more hard, either by nature or accident, as by the occaſion of the too long admiſſion of the air, then the rotten ſcales ſhall bee cut off by the inſtruments deſcribed in wounds of the head, driveing them into the bone with leaden mallets, leſt the part ſhould bee too much offended or ſhaken with the blow. The ſcales and fragments ſhall bee taken forth with mullets, the ſigns that all the rottenneſs is taken away, are the ſolidneſs of the bone thereunder, and the bloodie moiſture ſweating out thereat.

Signs that the rottenneſs is taken away.

CHAP

## CHAP. XXVII.

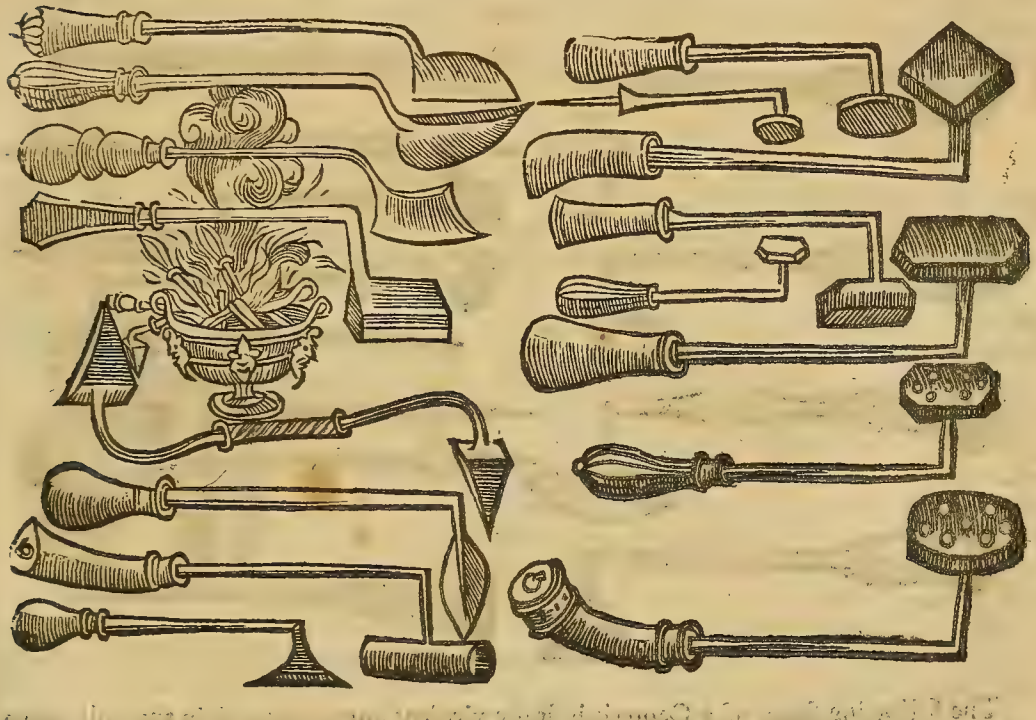
### *Of actual and potential Cauteries.*

BUt if the described remedies cannot take place, by reason of the malignitie or magnitude of the rottennes, then must wee com to actual and potential Cauteries. But I should rather approov of actual, becaus by strengthening the part, they consume the excrementitious humors wherewith it is over-charged, to wit, the matter of the *Caries*; which is not so effectually performed by potential Cauteries. Yet are wee oftimes forced to use these, to pleas the patients which are terrified at, and affraid of hot irons. Potential Cauteries are *aqua fortis*, *aqua vitrioli*, scalding oil, melted sulphur and boiling, and the like; in pouring on of which I would have the Surgeon to bee prudent and industious, lest hee should rashly violate the neighboring sound parts by the burning touch of these things; which his temeritie would caus vehement pains, inflammations, and other horrid symptoms. For actual Cauteries, their varietie in figure is so great, that it cannot bee defined, much less set down in writeing; for they must bee varied according to the largeness of the rottennes, and the figure and conformation of the fouled bones. Such as are more usual I have thought good here to delineate unto you, content onely to admonish you thus much, that som of these work by pricking, som by cutting, som flat-wise, and other-som with their points made to the form of an Olive-leaf.

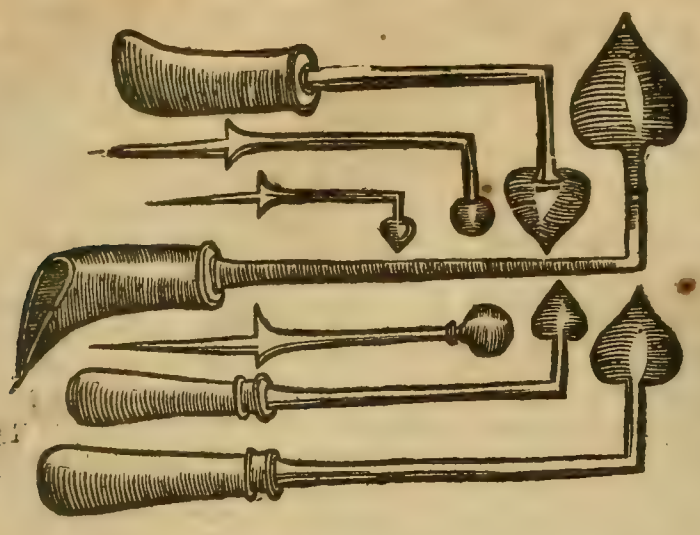
Actual Cauteries to bee preferred before potential.

Potential Cauteries.

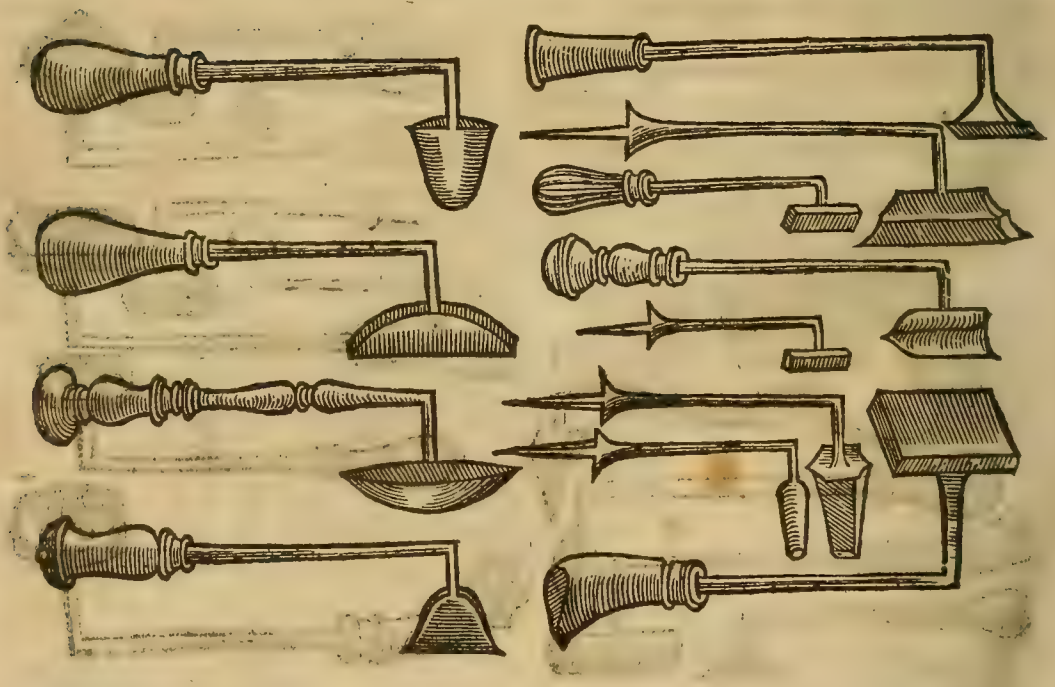
*Sundrie forms of actual Cauteries fit in all necessarie cases of all parts.*



*Other Cauteries.*

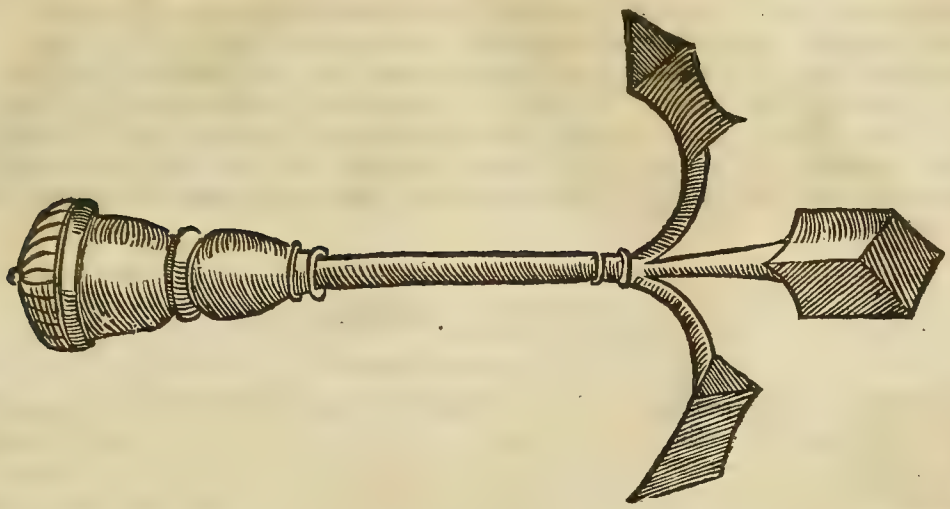


*Other Cauteries for the ſame purpoſe.*



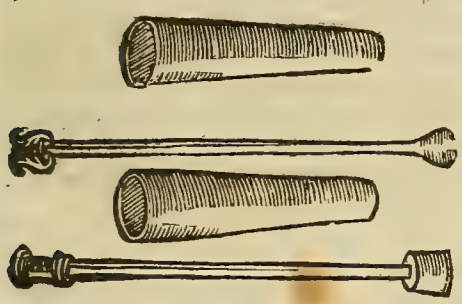
The following figure of a Cauterie is fit for virulent knots that ariſe in the ſcull, when you deſire to take away the fleſh that cover's the bone; for this purpoſe it is made hollow and ſharp in a triangular and quadrangular form, divided as it were into three branches, that you may ſo make uſe of which you pleaſ.

*The figure of an hollow and cutting Cauterie.*



The Cauteries, whoſe forms are hereafter expreſt, take place in rotten bones that lie deep in, wherein you cannot make uſe of the formerly deſcribed, without touching of the neighboring ſound parts. To avoid which danger, you ſhall put your Cauterie even to the bone through an iron pipe, which may keep the neighboring and fleſhie parts from burning.

*Actual Cauteries with their pipes.*



Great diſcommodities enſue upon too raſh, that is, too frequently applied Cauteries, or too long adhering to the bone; for by this immoderate and fierie heat not onely the excrementitious humiditie of the rotten bone is conſumed, but alſo the radical and ſubſtantial moiſture of the part is exhauſted; wherein alone nature endeavouring to caſt off the corrupt ſcales, and ſever the ſound from the rotten bone, and to ſubſtitute fleſh, ſtand's and conſiſt's. Whereof, the meaſure of applying of Cauteries ought to bee taken from the greatneſs of the rottenneſs, and the excrementitious, or after a manner, foaming humiditie ſweating through the pores of the bone. But before you preſs your Cauterie into the rotten bone which lie's verie deep in, as that which happen's in the thigh-bone, and upon other verie fleſhie parts, you muſt diligently defend the neighboring ſound and fleſhie part, as it were with a covering, for that the humor diffuſed by the touch of the fire, burn's the other places whereunto it diffuſeth it ſelf like ſcalding oil. After the cauterization, you muſt help forwards the falling away of the ſcales, by ſomtimes dropping in our oil of whelps, beeing made ſcalding hot. This oil, though verie fit for this purpoſe, yet do I not judge it fit to uſe it too often, it may ſuffice to have dropped it in, ſom twice or thrice. For at length it may violate the ſound bone, that lie's under the rotten, by the oilie, ſubtil and moiſt ſubſtance. Furthermore, a bone is the moſt drie part of the bodie, therefore unctuous and moiſt medicines are contrarie to its temper and conſiſtence. But it conduceth often and gently to moov the ſcales alreadie beginning to ſeparate themſelvs, and it haſten's the ſlackneſs of nature in caſting them off. Yet may you not uſe force, unleſs peradventure when as they hang as it were by a ſlender thred; otherwiſe if the unwarie Surgeon forcibly pluck away the ſcales before that nature hath put a cover upon the ſound bone, hee ſhall give way to a new alteration and fowlneſs by the appulſ of the air. Furthermore, after the corrupt ſcale is falling off by the force of nature expelling it, you muſt have diligent heed that you put not eating or corroding medicines upon the bone that is under it; for thus thou ſhalt conſume or waſte the fleſh which nature hath generated thereupon, which compoſed of newly concreted blood, is like in ſoftneſs to newly crudled milk, which otherwiſe in time would grow into a more ſolid and hard conſiſtence. This under-growing fleſh by little and little thruſt's the rotten bone above it, out of its place, and is the cauſ of the ſcaling thereof; it is at the firſt gathered together like the granes of a pomegranate, with a red, ſmooth & equal *ſanies*, and not ſtinking, and at length it caſt's forth a white matter. Therefore then wee muſt rather ſtraw thereon cephalick powder compoſed of ſuch things as have a facultie

Manner of applying of Cauteries.

Oil of whelps help's forwards the caſting off of ſcales.

A caution in mooving the ſcales of burnt bones.

Cephalick powders of what compoſed.

to drie without biteing, such as are Orrit-roots, washed aloës, mastich, myrrh, barlie-flowr, and the like. Lastly, it must bee cicatrized; it is better that scales of bones fall away of themselvs by the onely force of nature, then to bee plucked away by the force of medicines or instruments; becaus, such as are too violently and forcibly plucked away, leav corners like to fistulous ulcers. Neither ought the corrupted membranes when they are turned into *pus* to bee plucked away too violently, or to bee touched by too acrid medicines; for pain hereupon ariseing hath divers times caussed inflammation, convulsion and other pernicious symptoms. Therefore it is better to commit this business to nature, which in succes of time, by makeing use of the expulsive facultie, will easily free it self from this rotten substance; for that which is quick as far as it is able, will still put away that which is dead from it.

## CHAP. XXVIII.

*Of a Vulnerarie potion.*

BUt if the contumacious rottennes of the bone, and also a rebellious ulcer shall not yield to the described remedies, it will bee convenient to prescribe a vulnerarie potion to the patient. For nature helped by such a potion, hath to my knowledg sundrie times don wondrous things, in the amendment of corrupt bones, and consolidation of ulcers. For these potions though they do not purge the noxious humors away by stool, yet are they wondrous effectual to cleans ulcers, and free them from the exces of excrementitious humors, to cleans the blood, and purge it from all impuritie, to agglutinate broken bones, and knit the sinews. I have here thought good to speak of them, and chiefly, for that they were much commended by the Antients, but neglected by the modern Physicians and Surgeons. But if the cure of wounds and old ulcers bee performed by detersion, and the reposition of the lost substance, what medicine can sooner or rather do it then that, which by its admirable and almost divine force so purgeth the blood, that thereof, as from a fit and laudable matter, the flesh or anie other lost substance may bee fitly restored, and the part recover its former union? But if fistulous Ulcers, Cancers, Gouts, and the like diseases bee offended by the use of salt, spiced, acrid meats, and others which are of subtil parts, as mustard, onions, and garlike, or anie other exces in meat or drink; why may they not becom milde and gentle by medicated and contrarie meats and drinks, or at least bee reduced to a more equal temper? Therefore that Surgeons may know of what things such compositions may arise, I have here thought good to reckon them up, that you may learn what they are.

The use of vulnerarie potions.

| | |
|---|---|
| *Scabious.* | *The Capillaries.* |
| *Sanicle.* | *Herb-Robert.* |
| *Bugle.* | *Dove's-foot.* |
| *Mous-ear.* | *Dog's-tongue.* |
| *Burnet.* | *Avenes.* |
| *Madder.* | *Prunella.* |
| *Tansie.* | *Osmund.* |
| *Tops of hemp.* | *Clarie.* |
| *Tops of brambles.* | *Gentian.* |
| *Sow's-bread.* | *Herniaria.* |
| *Comforie the greater and lesser.* | *Red Cole-wurt, or Cabbage.* |
| *Vervine.* | *Scordium.* |
| *Bistort.* | *Cat's-mint.* |
| *Mug-wurt.* | *Cinque-foil.* |
| *Periwincle.* | *River-Crabs.* |
| *Centaurie.* | *Mace.* |
| *Adder's-tongue.* | *Bole-armenick.* |
| *Betonie.* | *Petum, or Tobacco* |
| *Carduus benedictus.* | *Mead-sweet.* |
| *The cordial flowers.* | *Colt's-foot.* |
| *Aristolochia, or Birth-wurts.* | *Dandelion.* |
| *Speed-well.* | *Plantane.* |
| *Agrimonie.* | *S. John's-wurt.* |

Of all these the Surgeon shall make choice according to the minde and judgment of the Physician, such as hee shall think fit and proper to everie ulcer or wound, or to each wounded and ulcerated part, according to the condition of the time, the temper of the patient, and kinde or nature of the disease. You may make drinks not onely of the decoctions of these, but also of their juices in white wine, or *ænomel*, which are good not onely to purifie the

the mass of the blood, to cleans sanious, virulent, filthie and dysenterious ulcers, but also to drive away putrefaction, scale-bones, dissolv clotted blood in bruises, to draw, pluck out and exterminate all strange bodies, as I have often observed to my great admiration. They are composed usually after this manner. ℞. *savic. bugul. scabios. beton. scord. nepet. an.* m.ß. *uvar. mund. sem. hyper. & card. ben. an.* ʒi. *trium flor. cord. an.* p.ii. *coquantur complete in aq. communi; postea in fine adde vini alb. mel. ros. & cinnam. quod sufficit, fiat decoctio, coletur per manicam.* Let him drink ʒiii. in the morning 3. hours before dinner. You may also with good success make injections with the same liquor into fistulous and sinuous ulcers, as also to wash the sordid ulcers therewith. You may also boil the same simples, as herbs, flowers and seeds in the patient's broths, that so they may acquire a medicinable and nourishing facultie. For the time of the affect, wherein you may with good success make use of these, wee have read in *Guido*, that hee used not to prescribe these potions to his patients when as they were newly wounded, for that they commonly are composed of things hot and opening, which heat and attenuate the blood, whence there would bee danger of a defluxion, upon the affected part. Wherefore when the matter is com to suppuration, when as there nothing remain's, but to cleans the ulcer, and fill it with flesh, no inflammation as now remaining in the part, I judg these potions may then bee used with good success.

The form of a vulnerarie potion.

In what time of the disease they are chiefly to bee used.

## CHAP. XXIX.

*Of Tetters, Ring-worms, or Chops occasioned by the* Lues Venerea.

Upon the cure of the *Lues Venerea*, usually Tetters and Chops happen thereupon, which make furrows in the palms of the hands and soles of the feet. They acquire their matter from salt phlegm, or adust choler, or the reliques of the venereous virulencie sent thither. The cure, especially when as the disease is grown old, is difficult; by reason that the humor hath long accustomed to flow that way, and for that it hath corrupted the habit of the part by the continual defluxion; but the cure is more easie, if the disease bee newly bred. Now you may know it is newly bred by the redness, accompanied by a great itching, and not onely a drineſs of the skin, but also a thickness and denseness thereof. That which is old, besides these fore-recited signs, have scalelie and bran-like hardnesses conjoyned therewith, which by scratching and rubbing cast off scales. For general medicines, the distemper of the liver, and habit of the bodie must bee corrected, which by the occasion of the former disease and remedies apt to inflame the blood, cannot but much swerv from their native temper. This may bee don by diet conveniently appointed, by purgeing and altering medicines, bleeding, batheing, applying of cupping-glasses and horns. For topick or particular medicines, wash such as are newly or lately bred with the following water which drie's and is of subtil parts. ℞. *aq. ros. & pariet. an.* ʒi. *aq. alum.* ʒii. *calc.* ʒii. *alum.* ʒiii. *pul subl.* ℈iv. *fiat lent. & minim. ebul. in baln. mar.* This water shall bee made more or less forcible, according to the condition of the disease. Or, ℞. *ol. tart.* ʒii. *sep. com.* ʒiv. *misc. fiat unguent. ad usum.* If the Physician shall think good, let the patient use a decoction of *Guaicum*, but that verie weak. But old Tetters and Chops must bee softned with emollient, attenuating and inciding decoctions, as also with liniments, ointments and plasters haveing the same effect. Then let the residue of the cure bee performed by fumigations, such as this which follow's. ℞. *pul. cinab* ʒii. *lad. ass. odor. stirac. cal. an.* ʒß. *olib. mastic. an.* ʒiii. *olei tart. & theriac. q. s. fiant trochisci*; use at each time som ʒß. of them, and let onely the affected parts receiv the smoak. Som commend the rubbing of the hands with the following medicine. Take the ashes of wine-lees, make thereof a lee, and strain it through an hypocras-bag, then put thereto som rennet, let them bee well mixed together in a mortar, and herewith let the hands bee rubbed or washed. Or, ℞. *unguent. enul.* ʒiii. *fugit.* ʒii. Or elſ, ℞. *res. pini.* ʒi. *cerus.* ʒß. *argent. viv.* ʒiii. *succi citri & lapath. acut. an.* ʒß. Let them bee incorporated, and make a liniment to bee used to the part. If to this you add *sublimate* so washed and prepared, as women use for their faces, you shall make it more effectuall. Others take burnt alum made into powder, and incorporated with the yolk of an egg, the juice of citrons, and a little aloës dissolved in *oxymel scilliticum*.

Signs of the new-bred disease.

The cure of newly com Tetters.

A water drying virulent Tetters.

The cure of old Tetters.

A Fumigation.

A Liniment.

## CHAP. XXX.

*Of cureing the* Lues Venerea *in infants and little children.*

Infants oftimes conceiv the seeds of this disease in the wombs of their mothers, and are born infected there-withall, pustles presently arising over all the bodies, infecting with the like disease as manie nurses as give them suck; they scarce ever recover thereof, for that they contracted the disease from their first confirmation. But such as are somwhat bigger, if they chance to catch the disease after they are born by sucking som infected nurs, or by anie other occasion or kinde of contagion, often times receiv cure.

The cure. For firſt, you ſhall cauſ the nurſ to uſe the *aqua theriacalis* here-under deſcribed, for the ſpace of twentie or more daies, that ſo ſhee may the better arm her ſelf againſt the contagion of this diſeaſ, and yield milk which may have the faculti̇e both of meat and medicine; ſhee ſhall bee careful as often as ſhee giv's the childe ſuck, to waſh and drie her teat or pap, leſt the virulencie that the childe breath'es out at his mouth, bee impact in the little holes of the teat through which the milk flow's out. Now the puſtles of little children ſhall bee annointed with ſom ointment that receive's *argentum vivum* in ſom ſmall quantitie, as *unguentum enulatum cum mercurio*, or the like. Then ſhall it bee ſwathed or bound up in ſwathes and clothes aired with the formerly deſcribed fumigations. For the reſt, it ſhall bee kept as warm as you can in ſom warm place. Theſe and the like muſt bee don not in one continued courſ, but at ſeveral ſeaſons, otherwiſe it is to bee feared, that it would cauſ ulcers to ariſe in the mouth, or elſ ſalivation. If anie ulcers ariſe in the mouth, and ſpread therein, they ſhall bee touched with the formerly deſcribed waters, but made ſomwhat weaker, haveing regard to the tender age of the patient; if the infant ſhall get this diſeaſ of its nurſ, let the nurſ bee preſently changed, for it beeing otherwiſe nouriſhed with tainted and virulent blood, can never bee healed. Manie have by theſe means recovered; but ſuch as have periſh't, have not periſh't by the default of medicines, but by the malignitie and vehemencie of the diſeaſ.

*A deſcription of the* Aqua Theriacalis, *or treacle-water formerly mentioned.*

A treacle-water. ℞. *raſor. interior. ligni ſancti gummoſi*, ℔ii. *polypod. querni*, ℥iv. *vini albi dulcedinis expertis* ℔ii. *aquæ fontan. puriſſ.* ℔viii. *aquar. cichor. & fumar. an.* ℥iv. *ſem. junip. heder. & baccar. lauri an.* ℥ii. *caryophyl. & macis, an.* ℥ß. *cort. citri ſaccaro condit. conſ. roſ. anthos, cichor. bugloſ. borag. an.* ℥ß. *conſ. ænulæ camp. theriac. vet. & mithrid. an.* ℥ii. diſtil them all in *balneo Mariæ*, after the following manner.

The manner of makeing it. Let the *Guaicum* bee infuſed in equal parts of wine, and the fore-mentioned waters for the ſpace of twelv hours, and the reſidue of the things in that which remain's of the ſame wine and waters for ſix hours ſpace, beating ſuch things as may require it, then let them bee mixed altogether, that ſo the liquor may bee endued with all their faculties. Which that it may bee the more effectually performed, let them bee boiled, put up in glaſs-bottles, cloſely ſtopped for ſom three or four hours ſpace, in a large kettle filled with boiling water, then let them bee put into a glaſs alembick, and ſo diſtilled. Give ℥iv. of this diſtilled liquor at once, beeing aromatized with ʒi. of cinnamon, and ℈i. of *Diamargariton*, and ℥ß. of ſugar, to give it a pleaſing taſte. Such a drink doth not onely retund the virulencie of the *Lues Venerea*, but ſtrengthen's the noble parts. *Rondeletius* make's an *aqua theriacalis* after this manner. ℞. *theriac. vet.* ℔i. *aceoſ.* m. iii. *rad. gram.* ℥iii. *puleg. card. ben. an.* m. ii. *flor. chamæm.* p. ii. *temperentur omnia in vino albo, & diſtillentur in vaſe vitrio*: reſerv the water for uſe; whereof let the patient take ℥ii. with ℥iii. of ſorrel and bugloſs-water: hee wiſheth this to bee don when hee ſhall enter into bed or a ſtove; for ſo this diſtilled liquor will cauſ ſweat more eaſily, and mitigate pain, whether given by it ſelf, or with a decoction of grommel, or of *chyna*, or burdock-roots; yet if the patient bee of a phlegmatick conſtitution, hee ſhall uſe a decoction of *Guaicum* in ſtead of a decoction of *chyna*, for it penetrate's more ſpeedily, by reaſon of its ſubtiltie of parts, and alſo expell's the dolorifick matter.

*Rondeletius* his treacle-water.

*The end of the nineteenth Book.*

# Of the *Small Pocks* and *Meazles*: As alſo of *Worms*, and the *Leproſie*.

## *The twentieth Book.*

### CHAP. I.

*Of the cauſes of the Small Pocks and Meazles.*

FOR that the ſmall Pocks and Meazles are diſeaſes, which uſually are fore-runners and fore-tellers of the Plague, not onely by the corruption of humors, but oftimes by default of the air; moreover, for that worms are oft-times generated in the plague, I have thought good to write of theſe things, to the end that by this treatiſe the young Surgeon may bee more amply and perfectly inſtructed in that peſtilent diſeaſ. Alſo I have thought good to treat of the Leproſie as beeing the off-ſpring of the higheſt corruption of humors in the bodie. Now the ſmall Pocks are puſtles, and the Meazles ſpots, which ariſe in the top of the skin by reaſon of the impuritie of the corrupt blood ſent thither by the force of nature. Moſt of the Antients have delivered that this impuritie is the reliques of the menſtruous blood remaining in the bodie of the infant, beeing of that matter from whence it drew nouriſhment in the womb, which lying ſtill or quiet for ſom ſpace of time, but ſtirred up at the firſt opportunitie of a hotter Summer, or a ſoutherlie or rainie ſeaſon, or a hidden malignitie in the air, and boiling up, or working with the whole maſs of the blood, ſpread or ſhew themſelvs upon the whole ſurface of the bodie. An argument hereof is, there are few or none who have not been troubled with this diſeaſ, at leaſt once in their lives, which when it begin's to ſhew it ſelf, not content to ſet upon ſom one, it commonly ſeazeth upon more: now commonly there is as much difference between the ſmall pocks and meazles, as there is between a Carbuncle and a peſtilent *Bubo*. For the ſmall pocks ariſe of a more groſs and viſcous matter, to wit, of a phlegmatick humor. But the meazles of a more ſubtil and hot; that is, a cholerick matter, therefore this yeeld's no marks thereof, but certain ſmall ſpots without anie tumor, and theſe either red, purple, or black. But the ſmall pocks are extuberateing puſtles, white in the mid'ſt, but red in the circumference, an argument of blood mixed with choler, yet they are ſcarce known at the beginning, that is on the firſt or ſecond daie they appear; but on the third and fourth daie they bunch out and riſe up into a tumor, becomming white before they turn into a ſcab; but the meazles remain ſtill the ſame. Furthermore the ſmall pocks prick like needles by reaſon of a certain acrimonie, and cauſ an itching; the meazles do neither, either becauſ the matter is not ſo acrid and biteing, or elſ for that it is more ſubtil, it eaſily exhale's, neither is it kept ſhut up under the skin. The patients often ſneez when as theſe matters ſeek paſſage out, by reaſon of the putrid vapors aſcending from the lower parts upwards to the brain. They are held with a continual Fever, with pains in their backs, itching of their noſe, head-ach, and a vertiginous heavineſs, and with a kinde of ſwounding or fainting, a nauſeous diſpoſition, and vomiting, a hoarſneſs, difficult and frequent breathing, an inclination to ſleep, a heavineſs of all the members, their eies are fierie and ſwollen, their urine red and troubled. For prognoſticks, wee may truely ſay thus much, That the matter whence this affect take's its original, partake's of ſo malign, peſtilent and contagious a qualitie, that not content to mangle and ſpoil the fleſhie part, it alſo eat's and corrupt's the bones like the *Lues Venerea*, as I obſerved not onely in *Anno Dom.* 1568. but alſo in diverſ other yeers, whereof I think it not amiſs to ſet down this notable example.

What the ſmal Pocks and Meazles are. Their matter.

Why the Meazles do not itch.

Prognoſticks.

The daughter of *Claude Piqué* a book-ſeller, dwelling in S. *James* his ſtreet at *Paris*, beeing ſom four or five yeers old, haveing been ſick of the ſmall pocks for the ſpace of a month, and nature could not overcom the malignitie of the diſeaſ, there roſe abſceſſes upon the *ſternon* and the joints of the ſhoulders, whoſe eating and virulent matter, corroded the bones of the *ſternon*, and divided them in ſunder; alſo it conſumed a great part of the top of the ſhoulder-bone, and the head of the blade-bone: of this thing I had witneſſes with me, *Marcus Myron* Phyſician of *Paris*, and at this preſent the King's chief Phyſician, *John Doreau* Surgeon to the *Conte de Bryane*, the bodie being diſſected in their preſence. Alſo you may obſerv in manie killed by the malignitie of this diſeaſ, and diſſected, that it cauſeth ſuch impreſſion of cor-

An hiſtorie.

ruption

What grievous and pernicious symptoms may happen by the small Pocks.

ruption in the principall parts, as bring's the dropsie, ptisick, a hoarsnes, *Asthma*, bloody flux ulcerating the guts, and at length bringing death, as the pustles have raged or raigned over these or these entrails, as you see them to do over the surface of the body; for they do not onely molest the external parts, by leaving the impressions & scars of the pustles and ulcers, rooting themselvs deep in the flesh, but also oft times they take away the facultie of motion, eating asunder, and weakning the joints of the elbow, wrest, knee and ancle. Moreover sundry have been deprived of their sight by them, as the Lord *Guymenay*, others have lost their hearing, and othersom their smelling, a fleshy excrescence growing in the passages of the nose and ears. But if anie reliques of the disease remain, and that the whole matter thereof bee not expelled by the strength of nature, then symptoms afterwards arise, which savor of the malignitie of the humor, yea and equall the harm of the symptoms of the *Lues Venerea*.

## CHAP. II.

### *Of the cure of the Small Pocks and Meazles.*

The cure.

THe cure of this disease useth to bee divers, according to the condition of the humor free from, or partaker of the venenate qualitie. For if it partake of malignitie, and the childe bee a sucking childe, such things shall bee given to the Nurse as may infringe and overcom the strength of the malignitie, as wee shall shew more at large, when wee com to treat of the cure of children which are sick of the Plague; howsoever it bee, the childe must bee kept in a warm room free from winde, and must be wrapped and covered with scarlet cloaths, until the pocks com forth. There shall bee provided for the Nurse medicated broths with purslain, lettuce, sorrell, succory, borage, and French barly bound up in a cloth. Shee shall shun all salt, spiced and baked meats, and in stead of wine drink a decoction of liquorice, raisons and sorrel roots. Shee shall also take purgeing medicins, as if shee were sick of the same disease, that so her milk may becom medicinable. Lastly, shee shall observ the same diet as is usually prescribed to such as have the plague. You shall give the childe no pap, or if you give it anie, let it be verie little. But if the childe bee weaned, let him abstain from flesh, until the feaver have left him, and the pocks bee fully com forth: in stead of flesh let him feed on barly and almond creames, chicken broths, wherein the fore-named herbs have been boyled, panadoes, gellies, culasses, prunes and raisons. Let his drink bee a ptisan made of French barlie, grass & sorrel roots, or with a nodula containing the four cold seeds, the pulp of prunes and raisons, with the shaveings of Ivorie and hart-horn; between meals the same decoction may bee mixed with som syrup of violets, but not of roses or any other astringent syrup, lest wee hinder the cours and inclination of the humor outwards. Let his sleep bee moderate, for too sound sleep draws back the matter to the center, and increaseth the fever; you must neither purge, nor draw blood the disease increasing or beeing at the height, unless paradventure there bee a great plenitude, or else the disease complicate with other, as with a pleurisie, inflammation of the eyes, or an squinancie which require it, lest the motion of nature should be disturbed; but you shall think it sufficient to loose the bellie with a gentle glyster: but when the height of the disease is over, and in the declension thereof, you may with *Cassia* or som stronger medicine evacuate part of the humors and the reliques of the disease. But in the state and increas it is better to use sudorificks, which by attenuating the humors and relaxing the pores of the skin may drive the cause of the disease som the center to the circumference, which otherwise relideing in the bodie might bee a cause of death; as I and *Richard Hubert* observed in two maids, whereof one was four, and the other seventeen yeers old; for wee dissecting them both beeing dead, found their entrails covered with scabbie or crusted pustles, like those that break forth upon the skin. Wee must not think that a bleeding at nose at the beginning of the disease, or in the first four or five daies should carrie away the matter and original of the disease, for nevertheless the pocks will com forth; but for that this is a true and natural *crisis* of this disease, as that which is carried to the surface & circumference of the bodie, such bleeding must not bee stopped, unless you fear it will cause swounding. The matter shall bee drawn out with a decoction of figs, husked lentils, citron-seeds, the seeds of fennel, parslie, smallage, roots of grass, raisons and dates. For such a decoction, certainly if it have power to cause sweat, hath also a facultie to send forth unto the skin the morbifick humor; the seeds of fennel and the like opening things relax and open the pores of the skin; figs lenifie the acrimonie of the matter, and gently cleans, the lentils keep the jaws and throat, and all the inward parts from pustles, and hinder a flux by reason of their moderate astriction, but haveing their husks on, they would binde more then is required in the disease; dates are thought to comfort the stomach, and citron-seeds to defend the heart from malignitie, licorish to smooth the throat, and hinder hoarsnes and cause sweat. But these things shall bee given long after meat, for it is not fit to sweat presently after meat; som there bee who would have the childe wrapped in linnen clothes steep'd in this decoction beeing hot, and afterwards hard wrung forth. Yet I had rather

The childe must have no pap.

How sound sleep doth harm in this disease.

Of purgeing, bleeding and sudorificks

An historie.

A sudorifick decoction.

When it is best to procure sweat.

rather to uſe bladders or ſpunges, or hot bricks for the ſame purpoſe; certainly a decoction of millet, figs and raiſons, with ſom ſugar, cauſeth ſweat powerfully. Neither is it amiſs whil'ſt the patient is covered in all other parts of the bodie, and ſweat's, to fan his face, for thus the native heat is kept in and ſo ſtrengthned, and fainting hindred, and a greater excretion of excrementitious humors cauſed. To which purpoſe you may alſo put now and then to the patient's noſe a *nodulus* made with a little vineger and water of roſes, camphire, the powder of ſanders, and other odoriferous things which have a cooling facultie, this alſo will keep the noſe from puſtles.

## CHAP. III.

*What parts muſt bee armed againſt, and preſerved from the Pocks.*

THe eies, noſe, throat, lungs and inward parts ought to bee kept free'r from the eruption of puſtles then the other parts; for that their nature and conſiſtence is more obnoxious to the malignitie of this virulencie, and they are eaſilyer corrupted and bleniſhed. Therefore leſt the eies ſhould bee hurt, you muſt defend them when you firſt begin to ſuſpect the diſeaſ, with the eie-lids, alſo moiſtning them with roſe-water, verjuce or vineger, and a little camphire. There are ſom alſo who for this purpoſe alſo make a decoction of Sumach, berberie-ſeeds, pomgranate-pills, aloës, and a little ſaffron; the juice of ſowr pomgranates, and the water of the whites of eggs dropped in with roſe-water are good for the ſame purpoſe; alſo woman's milk mixed with roſe-water and often renewed; and laſtly all ſuch things or have a repercuſſive qualitie. Yet if the eies bee much ſwoln and red, you ſhall not uſe repercuſſives alone, but mix therewith diſcuſſers and cleanſers, ſuch as are fit by a familaritie of nature to ſtrengthen the ſight; and let theſe bee tempered with ſom fennel or eie-bright water. Then the patient ſhall not look upon the light or red things for fear of pain and inflammation; wherefore in the ſtate of the diſeaſ, when the pain and inflammation of the eies are at their height, gently drying and diſcuſſive things properly conduceing to the eies are moſt convenient, as waſhed aloës, tuttie and Antimonie in the water of fennel, eie-bright and roſes. The formerly mentioned *nodulus* will preſerv the noſe, and linnen clothes dipped in the fore-ſaid aſtringent decoction, put into the noſtrils and outwardly applied. Wee ſhall defend the jaws, throat, and throtle, and preſerv the integritie of the voice by a gargle of oxycrate, or the juice of ſowr pomgranates, holding alſo the grains of them in their mouths, and often rouling them up and down therein, as alſo by nodula's of the ſeeds of *pſilium*, quinces and the like cold and aſtringent things. Wee muſt provide for the lungs and reſpiration by ſyrups of jubes, violets, roſes, white poppies, pomgranates, water-lillies, and the like. Now when as the Pocks are throughly com forth, then may you permit the patient to uſe ſomwhat a free'r diet, and you muſt wholly buſie your ſelf in ripening and evacuateing the matter, drying and ſcaleing them. But for the Meazles, they are cured by reſolution onely, and not by ſuppuration; the Pocks may bee ripened by annointing them with freſh butter, by fomenting them with a decoction of the roots of mallows, lillies, figs, line-ſeeds and the like. After they are ripe, they ſhall have their heads clipped off with a pair of ſciſſers, or elſ bee opened with a golden or ſilver-needle, leſt the matter contained in them, ſhould corrode the fleſh that lie's thereunder, and after the cure, leav the prints or pock-holes behinde it, which would cauſſom deformitie; the *pus*, or matter beeing evacuated, they ſhall bee dried up with *unguent. roſat.* adding thereto ceruſs, litharge, aloës and a little ſaffron in powder; for theſe have not onely a facultie to drie, but alſo to regenerate fleſh; for the ſame purpoſe the flowr of barlie and lupines are diſſolved and mixed with roſe-water, and the affected parts annointed therewith with a fine linnen rag; ſom annoint them with the ſward of bacon boiled in water and wine, then preſently ſtrow upon them the flowr of barlie or lupines, or both of them. Others mix crude honie newly taken from the comb, with barlie-flowr, and therewithall annoint the puſtles ſo to drie them; beeing dried up like a ſcurf or ſcab, they annoint them with oil of roſes, violets, almonds, or elſ with ſom cream, that they may the ſooner fall away, the puſtles beeing broken; tedious itchings ſollicit the patients to ſcratch, whence happen's excoriation and filthie ulcers, for ſcratching is the occaſion of greater attraction. Wherefore you ſhall binde the ſick childe's hand, and foment the itching parts with a decoction of marſh-mallows, barlie and lupines, with the addition of ſom ſalt. But if it bee alreadie excoriated, then ſhall you heal it with *unguent. album camphorat.* adding thereto a little powder of aloës or *Cinnabaris*, or a little *deſiccativum rubrum*. But if notwithſtanding all your application of repelling medicines, puſtles nevertheleſs break forth at the eies, then muſt they bee diligently cured with all manner of *collyria*, haveing a care that the inflammation of that part grow not to that bigneſs, as to break the eies, and that which ſomtimes happen's to drive them forth of their proper orbs. If anie cruſtie ulcers ariſe in the noſtrils, they may bee dried and cauſed to fall away by putting up of ointments. Such as ariſe in the mouth, palate

How to defend the eies.

When the eies muſt not bee defended by repercuſſives onely.

How to defend the noſe.

How the mouth.

How the lungs

How to prevent pock-arrs.

Remedies for excoriation.

late and throat, with hoarſneſs and difficultie of ſwallowing, may bee helped by gargariſms made with barlie-water, the waters of plantain and chervil, with ſom ſyrup of roſes, or *Diamoron* diſſolved therein; the patient ſhall hold in his mouth ſugar of roſes or the tablets of *Elect. diatragacanth. frigid.* The Pock-arrs left in the face, if they bunch out undecently, ſhall bee clipped away with a pair of ſciſſers, and then annointed with freſh *ungnent. citrin.* or elſ with this liniment. ℞. *amyli triticei, & amygdalarum excorticatarum, an.* ℥iß. *gum. tragacanth.* ℥ß. *ſeminis melonum, fabarum ſiccarum excoricat. farinæ hordei, an.* ℥iiii. Let them all bee made into fine powder, and then incorporated with roſe-water, and ſo make a liniment, wherewith annoint the face with a feather; let it bee wiped away in the morning, waſhing the face with ſom water and wheat-bran; hereto alſo conduceth *lac virginale*; Gooſ, duck's and capon's greaſ are good to ſmooth the roughneſs of the skin, as alſo oil of lillies; hares-blood of one newly killed and hot, is good to fill and plain, as alſo whiten the pock-holes, if they bee often rubbed therewith. In ſtead hereof manie uſe the ſward of Bacon rubbed warm thereon; alſo the diſtilled waters of bean flowers, lillie-roots, reed-roots, egg-ſhels, and oil of eggs are thought verie prevalent to waſte and ſmooth the Pock-arrs.

For the ulcers of the mouth and jaws.

To help the unſightlie ſcars of the face.

*A Diſcourſ of certain monſtrous creatures which breed againſt nature in the bodies of men, women, and little children, which may ſerv as an induction to the enſuing diſcourſ of worms.*

As in the *macrocoſmos* or bigger world, ſo in the *microcoſmos* or leſſer world there are windes, thunders, earth-quakes, ſhowrs, inundations of waters, ſterilities, fertilities, ſtones, mountains & ſundrie ſorts of fruits & creatures thence ariſe. For who can denie but that there is winde contained ſhut up in flatulent abſceſſes, and in the guts of thoſe that are troubled wth the colick? Flatulencies make ſo great a noiſ in diverſ women's bellies, if ſo bee you ſtand near them, that you would think you heard a great number of frogs croaking on the night-time: That water is contained in waterie abſceſſes, & the bellie of ſuch as have the dropſie, is manifeſted by that cure which is performed by the letting forth of the water; in fits of Agues the whole bodie is no otherwiſe ſhaken & tremble's, then the earth when it is heard to bellow, and felt to ſhake under our feet. Hee which ſhall ſee the ſtones which are taken out of the bladder, and com from the kidnies and diverſ other parts of the bodie, cannot denie but that ſtones are generated in our bodies. Furthermore wee ſee both men and women who in their face or ſom other parts, ſhew the impreſſion, or imprinted figure of a cherrie, plumb, *ſervice*, fig-mulberrie and the like fruit; the cauſ hereof is thought to bee the power of the imagination concurring with the formative facultie, and the tenderneſs of the yeelding and wax-like *embryon*, eaſie to bee brought into anie form or figure by reaſon of the proper and native humiditie. For you ſhall finde that all their mothers whil'ſt they went with them have earneſtly deſired or longed for ſuch things, which, whil'ſt they have too earneſtly agitated in their mindes, they have tranſ-ferred the ſhape unto the childe, whil'ſt that they could not enjoy the things themſelvs. Now who can denie but that the bunches of the back and large wens reſemble mountains? Who can gain-ſay, but that ſqualid ſterilitie may bee aſſimilated to the hectick drineſs of waſted and conſumed perſons? and fertilitie deciphered by the bodie diſtended with much fleſh and fat, ſo that the legs can ſcarce ſtand under the burden of the bellie? But that diverſ creatures are generated in one creature, that is in man, and that in ſundrie parts of him, the following hiſtories ſhall make it evident.

A compariſon between the bigger and leſſer world.

The generation of winde in man's bodie.

Of water.

Of ſtones.

Of fruits from the firſt conformation.

*Hollerius* tell's that a certain Italian by frequent ſmelling to the herb Baſil, had a Scorpion bred in his brain, which cauſſed long & vehement pain, and at length death; therefore I have here expreſt the figure of that Scorpion, found, when as his brain was opened.

*Lib. de morb. intercap. 1.*

*The figure of a Scorpion.*

It make's *Hollerius* conjecture of the cauſ and original of this Scorpion, probable for that *Chryſippus*, *Dyophanes* and *Plinie* write, that of baſil beaten between two ſtones, and laid in the ſun, there will com Scorpions.

*Fernelius* write's that in a certain ſouldier, who was flat noſed, upon the too long reſtraint or ſtoppage of a certain filthie matter that flowed out of the noſe, that there were generated two hairie worms of the bigneſs of ones finger, which at length made him mad, hee had no manifeſt fever, and hee died about the twentieth day: this was their ſhape, by as much as wee can gather by *Fernelius*'s his words.

*Lib. 5. de part. morbis cap. 7.*

*The effigies of worms mentioned by* Fernelius.

*Lewis Duret*, a man of great learning & credit, told me that he had com forth with his urine, after a long and difficult diſeaſ, a quick creature, of color red, but otherwiſe like in ſhape a Millepes, that is, a Cheſlop, or Hog-louſ. An hiſtorie.

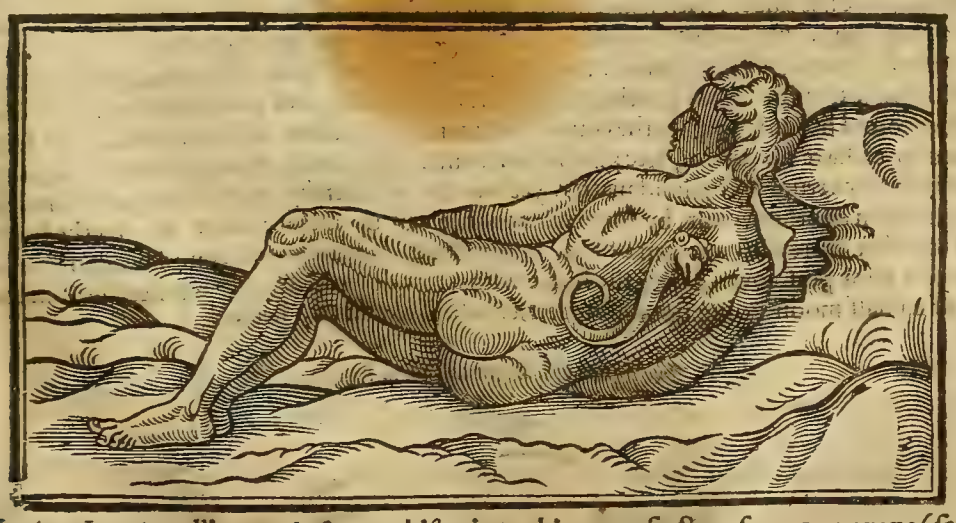
*The ſhape of a Millepes caſt forth by urine.*

Count *Charls* of *Mansfeldt*, laſt Summer troubled with a grievous and continual fever, in the Duke of *Guiſes* place caſt forth a filthie matter at his yard, in the ſhape of a live thing almoſt juſt in this form. An hiſtorie.

*The ſhape of a thing caſt forth by urine.*

Monſtrous creatures alſo of ſundrie forms are alſo generated in wombs of women; ſomwhiles alone, otherwhiles with a *mola*, and ſomtime with a childe naturally and well made; as frogs, toads, ſerpents, lizzards: which therefore the Antients have termed the Lumbard's brethren, for that it was uſual with their women, that together with their natural and perfect iſſue they brought into the world worms, ſerpents, and monſtroũs creatures of that kinde generated in their wombs, for that they alwaies more reſpected the decking of their bodies, then they did their diet. For it happened whileſt they fed on fruits, weeds and traſh, and ſuch things as were of ill juice, they generated a putrid matter, or certainly verie ſubject to putrefaction and corruption, and conſequently opportune to generate ſuch unperfect creatures. *Joubertus* telleth that there were two Italian women, that in one month brought forth each of them a monſtrous birth; the one that married a Tailor, brought forth a thing ſo little, that it reſembled a Rat without a tail; but the other a Gentlewoman, brought forth a larger, for it was of the bigneſs of a Cat; both of them were black, and as ſoon as they came out of the womb, they ran up high on the wall, and held faſt thereon with their nails. *Lycoſthenes* write's that in *Anno Dom.* 1494. a woman at *Cracovia*, in the ſtreet which taketh name from the holie Ghoſt, was delivered of a dead childe, who had a ſerpent faſtned upon his back, which fed upon this dead childe, as you perceiv by this following figure. *Nicolaus Flor. God. lib.7.c.18.* *Lib. error popul.*

*The figure af a ſerpent faſtned to a childe.*



*Levinus Lemnius* tell's a verie ſtrange hiſtorie to this purpoſe. Som few yeers agone (ſaith hee) a certain woman of the Iſle in Flanders, which beeing with childe by a Sailor, her bellie ſwelled *Lib. de occult. nat. mir. cap. 8.*

ſwelled up ſo ſpeedily, that it ſeemed ſhee would not bee able to carrie her burden to the term preſcribed by nature; her ninth month beeing ended ſhee call's a midwife, and preſently after ſtrong throws and pains, ſhee firſt brought forth a deformed lump of fleſh, haveing as it were two handles on the ſides, ſtretched forth to the length and manner of arms, and it moved and panted with a certain vital motion, after the manner of ſpunges and ſea-nettles; but afterwards there came forth of her womb a monſter with a crooked noſe, a long and round neck, terrible eies, a ſharp tail, and wonderful quick of the feet, it was ſhaped much after this manner.

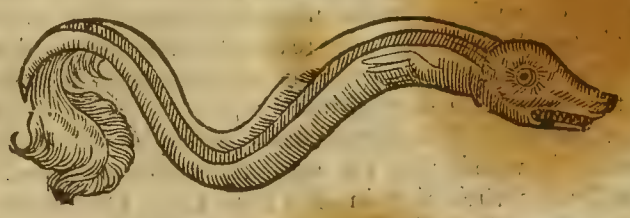
*The ſhape of a monſter that came forth of a woman's womb.*

As ſoon as it came into the light it filled the whole room with a noiſe & hiſſing, running to everie ſide to finde out a lurking hole wherein to hide its head, but the women which were preſent, with a joint conſent fell upon it, and ſmothered it with cuſhions: at length the poor woman wearied with long travel, was delivered of a boie, but ſo evilly entreated and handled by this monſter, that it died as ſoon as it was chriſtened.

*Lib. de divinis natur. Characteriſmis.*

*Cornelius Gemma* a Phyſician of *Lovain*, telleth that there were manie verie monſtrous and ſtrange things caſt forth both upwards and downwards out of the bellie of a certain maid of *Lovain*, of the age of fifteen years. Amongſt the reſt, ſhee caſt forth at her fundament, together with her excrements, a liveing creature ſom foot & half long, thicker then ones thumb, verie like an eel, but that it had a verie hairie tail; I have here given you the figure of the monſter as it was expreſſed by him.

*The figure of a monſter that came forth of a maid's bellie.*



An hiſtorie.

Maſter *Peter Barque* and *Claude le grand*, Surgeons of *Verdun*, lately affirmed to mee that they cured the wife of a certain Citizen of *Verdun*, which out of an Abſceſs broken in the bellie, caſt forth a great number of worms, together with the quittur; and theſe were of the thickneſs of ones finger, with ſharp heads, which ſo gnawed her guts, that the excrements for a long time came forth at the ulcer, but now ſhee is perfectly recovered.

An hiſtorie.

*Anthonie Benenius* a Phyſician of *Florence* telleth; that one *John Menuſierus*, a man of fortie yeers of age, troubled with continual pains at his ſtomach, was often at the point of death, neither found hee anie help by the counſels of manie Phyſicians which hee uſed. At length comming to have his advice, hee gave him a vomit, by means whereof hee caſt up a great quantitie of corrupt and putrid matter, yet was hee not thereby eaſed of his pain. Therefore hee gave him another vomit, by force whereof hee caſt up much matter like to the former, and together therewith a worm of four fingers long, haveing a red round head, of the bigneſs of a great peaſ, covered over the bodie with a ſoft downineſs, with a forked tail, in manner of an half moon, going upon four feet; two before, and two behinde.

*The figure of a worm caſt forth by vomit.*

The

Why ſhould I mention the prodigious bodies which are found in abſceſſes, as ſtones, chalk, ſand, coles, ſnail-ſhels, ſtrawes, hay, horns, hairs, and manie kindes of living and dead creatures? For there is nothing in the generation of theſe things (cauſſed by corruption, preceded by much alteration) which may make us admire, or hold us in ſuſpence, eſpecially if wee ſhal conſider that nature, the fruitful parent of all things, hath put divers portions and particles of the univerſal matter whereof the greater world is compoſed into this *microcoſmos*, or little world, man; whereby hee might the rather ſeem to bee made to the reſemblance and form of the greater. Wherefore it ſo deſport's it ſelf here, that it may counterfeit and reſemble all the actions and motions which it uſeth to perform in the ſcene of the greater world, in this little one, if ſo bee that matter bee not wanting.

The efficient and material cauſſes of ſuch things as are preternaturally generated in our bodies.

## CHAP. IIII.

*Of the worms which uſe to breed in the guts.*

A Groſs, viſcid and crude humor is the material cauſ of worms, which haveing got the beginning of corruption in the ſtomach, is quickly carried into the guts, and there it putrefie's, haveing not acquired the form of laudable *Chylus* in the firſt concoction. This, for that it is viſcid, tenaciouſly adhere's to the guts, neither is it eaſily evacuated with the other excrements; therefore by delay it further putrefies, and by the efficacie of heat, it turn's into the matter and nouriſhment for worms. This alimentarie humor beeing conſumed, unleſs ſom freſh, ſupplie the want thereof, which may eaſe their hunger, they moov themſelvs in the guts with great violence, they cauſ grievous and great pains, yea, and oftimes they creep up to the ſtomach, and ſo com forth by the mouth, and ſomtimes they aſſcend into the holes of the palate, and com forth at the noſe. Worms are of three ſorts; for ſom are round and long, others broad and long, others ſhort and ſlender. The firſt are called by the Antients *Teretes*, that is, round; for that they are long and round. The ſecond are named *Teniæ*, for that their bodies are long and broad, like a rowler or ſwathe. The third are termed *Aſcarides*, for that they commonly wrap themſelvs up round. Other differences of worms are taken from their colors, as red, white, black, aſh-colored, yellowiſh. Som alſo are hairie, with a great head like the little fiſh which the French call *Chabot*, wee, a *Miller's-thumb*; in ſom diſeaſes manie worms are generated and caſt forth by the fundament, as ſmall as hairs, and uſually of color white, and theſe are they which are called *Aſcarides*. The diverſitie of colors in worms proceedeth not from the like diſtinct diverſitie of humors whereof they are generated. For the melancholick and cholerick humor by their qualities are wholly unfit to generate worms. But this manifold varietie in color, is by reaſon of the different corruption of the *chylous* or phlegmatick humor whereof they are bred. The long and broad worms are oftentimes ſtretched alongſt all the guts, beeing like to a mucous or albuminous ſubſtance; and verily I ſaw one voided by a woman, which was like to a ſerpent, and ſom ſix foot long, which ought not to ſeem ſtrange, ſeeing it is noted by the Antients, that they have ſeen worms ſo long, as the length of the whole guts, that is, ſeven times the length of ones bodie. *Wierus* write's, that hee ſaw a countrie-man who voided a worm eight foot and one inch long, in head and mouth reſembling a Duck, which therefore I have thought good here to expreſs.

How worms are generated.

The reaſon that they ſometimes com forth at the mouth.

The differences of worms.

An hiſtorie.

An hiſtorie.

*The figure of a worm, generated in, and caſt forth of the guts.*

*Valeriola* affirmeth, that hee ſaw a worm above nine foot long. Now as worms differ in ſhape, ſo are their places of generation alſo different. For the round and long worms are commonly generated in the ſmaller guts, the reſt in the greater, but eſpecially the *Aſcarides*:

*In obſervat.*

In what places of the bellie worms are generated.

none breed in the ſtomach, as that which is the place of the firſt concoction. There truly the matter which breedeth theſe worms, get's the firſt rudiment of corruption, but com's to perfection onely in the guts; they breed in ſom infants in their mothers bellies, by the pravitie and corrupt nature of the humor flowing from the mother for the nouriſhment of the childe, which for that then they do not expell it by ſiege, it by delay putrefieth the more, and yield's fit matter for the breeding of worms, as ſom have obſerved out of *Hippocrates*. Laſtly, worms breed in people of anie age that are Bellie-gods, and given to glutton-nie, as alſo in ſuch as feed upon meats of ill juice, and apt to corrupt, as crude ſummer-fruits, cheeſ, and milk-meats. But to know in what part of the guts the worms do lurk, you muſt note, that when they are in the ſmall guts, the patients complain of a pain in their ſtomach, with a dog-like appetite, whereby they require manie and ſeveral things without reaſon, a great part of the nouriſhment beeing conſumed by the worms lying there; they are alſo ſubject to often fainting, by reaſon of the ſympathie which the ſtomach, beeing a part of moſt exquiſite ſenſ, hath with the heart, the noſe itches, the breath ſtink's, by reaſon of the exhalations ſent up from the meat corrupting in the ſtomach; through which occaſion they are alſo given to ſleep, but are now and then waked there-from by ſudden ſtartings and fears; they are held with a continued and ſlow fever, a drie cough, a winking with their eie-lids, and often changeing of the color of their faces. But long and broad worms, beeing the innates of the greater guts, ſhew themſelvs by ſtools repleniſhed with manie ſloughs, here and there reſembling the ſeeds of a Musk-melon or Cucumber. *Aſcarides* are known by the itching they cauſ in the fundament, cauſſing a ſenſ as if it were Ants running up and down; cauſſing alſo a *tenaſmus*, and falling down of the fundament. This is the cauſ of all theſe ſymptoms; their ſleep is turbulent and often clamorous, when as hot, acrid and ſubtil vapors, raiſed by the worms from the like humor and their food, are ſent up to the head; but ſound ſleep by the contrarie, as when a miſtie vapor is ſent up from a groſs and cold matter. They dream they eat their ſleep, for that while the worms do more greedily conſume the *chylous* matter in the guts, they ſtir up the ſenſ of the like action in the phantaſie. They grate or gnaſh their teeth by reaſon of a certain convulſifick repletion, the muſcles of the temples and jaws beeing diſtended by plentie of vapors. A drie cough com's by the conſent of the vital parts ſerving for reſpiration, which the natural, to wit, the *Diaphragma*, or midriff, ſmit upon by acrid vapors, and irritated as though there were ſom humor to bee expelled by coughing. Theſe ſame acrid fumes aſſailing the orifice of the ventricle, cauſ either an hicketting, or elſ a fainting, according to the condition of their conſiſtence, groſs or thin; theſe carried up to the parts of the face cauſ an itching of the noſe, a darkneſs of the ſight, and a ſudden changeing of the color in the cheeks. Great worms are worſ then little ones, red then white, living then dead, manie then few, variegated then thoſe of one color, as thoſe which are ſigns of a greater corruption. Such as are caſt forth bloodie and ſprinkled with blood, are deadlie, for they ſhew that the ſubſtance of the guts is eaten aſunder; for oftimes they corrode and perforate the bodie of the gut wherein they are contained, and thence penetrate into divers parts of the bellie, ſo that they have com forth ſomtimes at the navel, haveing eaten themſelvs a paſſage forth, as *Hollerius* affirmeth. When as children troubled with the worms draw their breath with difficultie, and wax moiſt over all their bodies, it is a ſign that death is at hand. If at the beginning of ſharp fevers, round worms com forth alive, it is a ſign of a peſtilent fever, the malignitie of whoſe matter they could not endure, but were forced to com forth. But if they bee caſt forth dead, they are ſigns of greater corruption in the humors, and of a more venenate malignitie.

*Ad finem lib. 4. de morbis.*

Signs of worms in the ſmall guts.

Signs of worms in the great guts.

Signs of *Aſcarides.*

Why worms of divers colors are more dangerous.

## CHAP. V.

*What cure to bee uſed for the Worms.*

The general indications of cureing the worms.

IN this diſeaſ there is but one indication, that is, the excluſion or caſting out of the worms, either alive or dead, forth of the bodie, as beeing ſuch that in their whole kinde are againſt nature; all things muſt bee ſhunned which are apt to heap up putrefaction in the bodie by their corruption, ſuch as are crude fruits, cheeſ, milk-meats, fiſhes, and laſtly, ſuch things as are of a difficult and hard digeſtion, but prone to corruption. Pap is fit for children, for that they require moiſt things, but theſe ought to anſwer in a certain ſimilitude to the conſiſtence and thickneſs of milk, that ſo they may the more eaſily bee concocted and aſſimilated, and ſuch onely is that pap which is made with wheat flower, not crude, but baked in an oven, that the pap made therewith may not bee too viſcid nor thick, if it ſhould onely bee boiled in a pan as much as the milk would require; or elſ the milk would bee too terreſtrial, or too wateriſh, all the fattie portion thereof beeing reſolved, the cheeſie and whayiſh portion remaining, if it ſhould boil ſo much as were neceſſarie for the ful boiling of the crude meat;

meat; they which uſe meal otherwiſe in pap yeeld matter for the generateing of groſs and viſcid humors in the ſtomach, whence happen's obſtruction in the firſt veins and ſubſtance of the liver; by obſtruction worms breed in the guts, and the ſtone in the kidnies and bladder. The patient muſt bee fed often, and with meats of good juice, leſt the worms through want of nouriſhment, ſhould gnaw the ſubſtance of the guts. Now when as ſuch things breed of a putrid matter, the patient ſhall bee purged, and the putrefaction repreſt by medicines mentioned in our Treatiſe of the Plague. For the quick killing and caſting of them forth, ſyrup of ſuccorie, or of lemmons with rubarb, a little treacle or methridate is a ſingular medicine, if there bee no fever; you may alſo for the ſame purpoſe uſe this following medicine. ℞. *cornu cervi, pul. raſur. eboris, an.* ʒiß. *ſem. tanacet. & contra verm. an.* ʒi. *fiat decoctio pro parvâ doſi, in colaturâ infunde rhei optimi,* ʒi. *cinam.* ℈i *diſſolve ſyrupi de abſinthio,* ʒß. make a potion, give it in the morning three hours before anie broth. Oil of Olives drunk, kill's worms; as alſo water of knot-graſs drunk with milk; and in like manner all bitter things. Yet I could firſt wiſh them to give a glyſter made of milk, honie and ſuger, without oils and bitter things, leſt ſhunning thereof, they leav the lower guts, and com upwards; for this is natural to worms, to ſhun bitter things, and follow ſweet things. Whence you may learn, that to the bitter things which you give by the mouth, you muſt alwaies mix ſweet things, that allured by the ſweetneſs, they may devour them more greedily, that ſo they may kil them. Therefore I would with milk and ſuger, mix the ſeeds of centaurie, *Rue*, wormwood, aloës and the like: hartſhorn is verie effectual againſt worms, wherefore you may infuſe the ſhaveings thereof in the water or drink that the patient drink's, as alſo to boil ſom thereof in his broths. So alſo treacle drunk or taken in broth, killeth the worms; purſlain boiled in broths, and diſtilled and drunk, is alſo good againſt the worms; as alſo ſuccorie and mints; alſo a decoction of the leſſer houſ-leek and ſebeſtens given with ſuger before meat; it is no leſs effectual to put worm-ſeeds in their pap, and in roſted apples, and ſo to give them it. Alſo you may make ſuppoſitories after this manner, and put them up into the fundament. ℞. *coralli ſubalbi, raſuræ eboris, cornu cervi uſti, ireos an.* ℈ii. *mellis albi* ʒiiß. *aquæ centinodiæ q. ſ. ad omnia concorporanda, fiant Glandes:* let one bee put up everie daie, of the weight of ʒii. for children; theſe ſuppoſitories are chiefly to bee uſed for *Aſcarides*, as thoſe which adhere to the right gut. To ſuch children as can take nothing by the mouth, you ſhall applie cataplaſms to their navels made of the powder of cummin-ſeeds, the flowr of lupines, worm-wood, ſouthern-wood, tanſie, the leavs of artichokes, *Rue*, the powder of *coloquintida*, citron-ſeeds, aloës, arſ-ſmart, horſ-mint, peach-leavs, *Coſtus amarus*, *Zedoaria*, ſope and ox-gall. Such cataplaſms are oftimes ſpred over all the bellie, mixing therewith aſtringent things for the ſtrengthening of the part, as oil of myrtles, Quinces and maſtich; you may alſo applie a great onion hollowed in the mid'ſt, and filled with aloës and treacle, and ſo roſted in the members, then beaten with bitter almonds, and an ox-gall. Alſo you may make emplaſters of bitter things, as this which follow's. ℞. *fellis bubuli, ſucci abſinthii, an.* ʒii. *calocyn.* ʒi. *terantur & miſceantur ſimul, incorporentur cum farinâ lupinorum:* make hereof an emplaſter to bee laid upon the Navel.

Wherfore, and wherwith ſo as have worms, muſt bee purged.

Hartſ-horn good againſt the worms.

Supposſitoriee againſt the *Aſcarides*.

A plaſter againſt the worms.

Liniments and ointments may bee alſo made for the ſame purpoſe to annoint the bellie, you may alſo make plaſters for the navel of *pillulæ ruf.* annointing in the mean time the fundament with honie and ſuger, that they may bee chafed from above with bitter things, and allured downwards with ſweet things. Or elſ take worms that have been caſt forth, drie them in an iron-pan over the fire, then powder them, and give them with wine or ſom other liquor to bee drunk, for ſo they are thought quickly to kill the reſt of the worms. Hereto alſo conduceth the juice of citrons, drunk with the oil of bitter almonds, or ſallet-oil. Alſo ſom make bathes againſt this affect of worm-wood, galls, peach-leavs boiled in water, and then bathe the childe therein.

But in cureing the worms, yon muſt obſerv that this diſeaſ is oftimes entangled with another more grievous diſeaſ, as an acute and burning fever, a flux or ſcouring, and the like, in which (as for example ſake) a fever beeing preſent and conjoined therewith, if you ſhall give worm-ſeeds, old Treacle, myrrh, aloës, you ſhall increaſ the fever and flux, for that bitter things are verie contrarie to theſe affects. But if, on the contrarie, in a flux whereby the worms are excluded, you ſhall give corral, and the flowr of Lentils, you ſhall augment the fever, makeing the matter more contumacious by drie and aſtringent things. Therefore the Phyſician ſhall bee careful in conſidering whether the fever bee a ſymptom of the worms, or on the contrarie it bee eſſential, and not ſymptomatick; that this beeing known, hee may principally inſiſt in the uſe of ſuch medicines as reſiſt both affects, as purgeing and bitteriſh in a fever and worms, but bitter and ſomwhat aſtrictive things in the worms and flux.

A fever ſomtimes a ſymptom, and ſomtimes a diſeaſ.

## CHAP. VI.

*A ſhort deſcription of the* Elephantiaſis *or Leproſie, and of the cauſſes thereof.*

THis diſeaſ is termed *Elephantiaſis*, becauſ the skin of ſuch as are troubled therewith is rough, ſcabious, wrinkled and unequal, like the skin of an Elephant. Yet this name may ſeem to bee impoſed thereon by reaſon of the greatneſs of the diſeaſ. Som from the opinion of the Arabians have termed it *Lepra*, or Leproſie (but unproperly, for the *Lepra* is a kinde of ſcab and diſeaſ of the skin, which is vulgarly called *Malum ſancti manis*) which word for the preſent wee will uſe, as that which prevail's by cuſtom and antiquitie. Now the Leproſie (according to *Paulus*) is a Cancer of the whole bodie, the which (as *Avicen* add's) corrupt's the complexion, form and figure of the members. *Galen* think's the cauſ ariſeth from the error of the ſanguifying facultie, through whoſe default the aſſimilation in the fleſh and habit of the bodie is depraved, and much changed from it ſelf, and the rule of nature. But *ad Glauconem*, hee define's this diſeaſ, An effuſion of troubled or groſs blood into the veins and habit of the whole bodie. This diſeaſ is judged great, for that it partake's of a certain venenate virulencie, depraveing the members and comlineſs of the whole bodie. Now it appear's, that the Leproſie partake's of a certain venenate virulencie by this, that ſuch as are melancholick in the whole habit of their bodies, are not leprous. Now this diſeaſ is compoſed of three differences of diſeaſes: Firſt, it conſiſt's of a diſtemper againſt nature, as that which at the beginning is hot and drie, and at length the ebullition of the humors ceaſing, and the heat diſperſed, it becom's cold and drie, which is the conjunct cauſ of this ſymptom. Alſo it conſiſt's of an evil compoſition or conformation, for that it deprave's the figure and beautie of the parts. Alſo it conſiſt's of a ſolution of continuitie, when as the fleſh and skin are cleft in divers parts with ulcers and chops. The Leproſie hath for the moſt part three general cauſſes, that is, the primitive, antecedent, and conjunctive: The primitive cauſ is either from the firſt conformation, or com's to them after they are born. It is thought to bee in him from the firſt conformation, who was conceived of depraved and menſtruous blood, and ſuch as inclined to melancholie; who was begot of the leprous ſeed of one or both his parents, for leprous perſons generate leprous, becauſ the principal parts beeing tainted and corrupted with a melancholick and venenate juice, it muſt neceſſarily follow, that the whole maſs of blood and ſeed that fall's from it, and the whole bodie ſhould alſo bee vitiated. This cauſ happen's to thoſe that are alreadie born, by long ſtaying and inhabiting in maritime countries, whereas the groſs and miſtie air, in ſucceſs of time, induceth the like fault into the humors of the bodie; for that, according to *Hippocrates*, ſuch as the air is, ſuch is the ſpirit, and ſuch the humors. Alſo long abideing in verie hot places, becauſ the blood is torrified by heat, but in cold places, for th at they incraſſate, and congealing the ſpirits do after a manner ſtupifie, may bee thought the primitive cauſſes of this diſeaſ. Thus in ſom places of Germanie there are divers leprous perſons; but they are more frequent in Spain, and over all Africa, then in all the world beſide, and in Languedoc, Provence and Guyenne, are more then in whole France beſides. Familiaritie, copulation, and cohabitation with leprous perſons may bee reckoned amongſt the cauſſes thereof, becauſ they transfer this diſeaſ to their familiars by their breath, ſweat and ſpittle left on the edges of the pots or cups. This diſeaſ is alſo cauſſed by the too frequent uſe of ſalt, ſpiced, acrid and groſs meats, as the fleſh of Swine, Aſſes, Bears, pulſ, milk-meats; ſo alſo groſs and ſtrong wines, drunkenneſs, gluttonie, a laborious life, full of ſorrow and cares, for that they incraſſate, and as it were burn the blood. But the retention of melancholick excrements, as the ſuppreſſion of the hemorrhoids, courſes, ſmall pocks and meazles, as alſo a quartain fever accuſtomed to com at ſet-times; the drying up of old ulcers, for that they defile the maſs of the blood with a melancholick droſs and filth. Now you muſt underſtand, that the cauſ of the Leproſie by the retention of the ſuperfluities, happen's, becauſ the corrupt blood is not evacuated, but regurgitate's over the whole bodie, and corrupt's the blood that ſhould nouriſh all the members; wherefore the aſſimilative facultie cannot well aſſimilate by reaſon of the corruption and default of the juice; and thus in concluſion the Leproſie is cauſſed. The antecedent cauſſes are the humors diſpoſed to aduſtion and corruption into melancholie, by the torrid heat; for in bodies poſſeſſed with ſuch heat, the humors by aduſtion eaſily turn into melancholie, which in time acquiring the malignitie and corruption of a virulent and venenate qualitie, yield's a beginning and eſſence to the Leproſie. The conjunct cauſſes are the melancholick humors, which are now partakers of a venenate and malign qualitie, and ſpread over the whole habit of the bodie, corrupting and deſtroying it firſt by an hot and drie diſtemper, and then by a cold and drie, contrarie to the beginnings of life. For hence inevitable death muſt enſue, becauſ our life conſiſt's in the moderation of heat and moiſture.

*Lib. 4. cap. 1.*
*Lib. 2. cap. 11.*

There is a certain hidden virulencie in the Leproſie.

The primitive cauſ of a Leproſie.

How they may bee leprous from their firſt conformation.

The antecedent cauſ of a Leproſie.

The conjunct cauſ.

How it com's to bee deadlie.

CHAP.

## CHAP. VII.

*The signs of a Leprosie, breeding, present, and alreadie confirmed.*

THe disposition of the bodie and humors to a Leprosie is shewed by the change of the native and fresh color of the face, by that affect of the face, which is commonly called *Gutta rosacea*, red and blackish suffusions and pustles, the falling away of the hairs, and a great thirst, and a drinesse of the mouth both by night and day, a stinking breath, little ulcers in the mouth, the change of the voice to hoarsnes, a desire of venerie above nature and custom. Now there are four times of this disease, the beginning, increas, state and declension. The beginning is, when as the malignitie hath not gon further then the inner parts and bowels, wherupon the strength must need's bee more languid. The increas is, when as the virulencie com's forth, and the signs and symptoms are everie day increased in number and strength. The state is, when as the members are exulcerated. The declension is, when as the aspect of the face is horrid, the extreme parts fall away by the profunditie and malignitie of the ulcers, so that none, no not of the common sort of people, can doubt of the disease. According to the doctrine of the Antients, wee must in searching out of the signs of this disease beeing present, have chief regard to the head. For the signs of diseases more properly and truly shew themselvs in the face, by reason of the softnes and raritie of the substance thereof, and the tenuitie of the skin that cover's it; wherefore a black and adust humor diffused there-under, easily shew's it self, and that not onely by the mutation of the color, but also of the character and bulk, and oftimes by manifest hurting it. Wherefore you must observ in the head whether it have scauls, and whether in the place of those hairs that are fallen away, other's more tender, short and rare grow up, which is likely to happen through defect of fit nourishment to preserv and generate hairs, through corruption of the hairie scalp that should bee stored with such nourishment, and of the habit it self, and through the unfitnes thereof to contain hairs: lastly, by the acrimonie of the vapors sent up from the adust humors and entrails, fretting asunder the roots of the hairs. But if not onely the hair, but also som portion of the skin and flesh about the roots of the hair, com away by pulling, it is an argument of perfect corruption: let this therefore be the first sign of a Leprosie. A second and verie certain sign is, a numerous and manifest circumscription of round and hard pushes or pustles under the eie-brows, and behinde the ears, and in several places of the face, resembling round and hard kernels, occasioned by the default of the assimulating facultie. The caus of this default is the grosnes of the flowing nourishment, by which means it beeing impact, and stopping in the straitnes of the way, it grow's round, as it were compassed about in the place whereas it stick's, and by the means of the cruditie, for that it is not assimulated, and by delay, it is further hardned. The third sign is, the more contract and exact roundnes of the ears, their grosnes, and as it were grainie spissitude or densnes; the caus of their roundnes is the consumption of the flaps and fleshie part through want of nourishment, and exces of heat; but the occasion of their grainie spissitude is the grosnes of the earthie nourishment flowing thither. The fourth sign is a Lion-like wrinkling of the fore-head, which is the reason that som term this disease *morbus Leoninus*; the caus hereof is the great drinesse of the habit of the bodie, which also is the reason that the bark of an old oak is rough and wrinkled. The fifth is, the exact roundnes of the eies, and their fix't and immoovable steddinesse; verily the eies are naturally almost round, yet they appear obtuse, and somwhat broad on the fore-side, but end in a *Conus* on the hind part, by reason of the concours and figure of the muscles and fat investing them. Therefore these beeing consumed either through defect of laudable nourishment, or elss by the acrimonie of the flowing humor, they are restored to their proper figure and roundnes. Now the muscles which mooved the eies beeing consumed, and the fat which facilitated their motion wasted, it com's to pass that they stand stiff and unmoovable, beeing destitute of the parts yeelding motion, and the facilitie thereof. The sixth sign is, the nostrils flat outwardly, but inwardly straight and contracted, that is, an earthie and gros humor forced from within outwards, which swel s the sides or edges of the nostrils; whence it is, that the passages of the nose appear as it were obstructed by the thickness of this humor; but they are depressed and flatted by reason of the rest of the face and all the neighboring parts swoln more then their wont; add hereto that the partition is consumed by the acrimonie of the corrodeing and ulcerateing humor. The seventh is, the lifting up, thicknes and swelling of the lips, the filthines, stinch and corrosion of the gums by acrid vapors riseing to the mouth; but the lips of leprous persons are more swoln by the internal heat burning and incrassateing the humors, as the outward heat of the Sun doth in the Moors. The eighth sign is, the swelling and blackness of the tongue, and as it were varicous veins lying under it; becaus the tongue, beeing by nature spongeous and rare, is easily stored with excrementitious humors, sent from the inner parts unto the habit of the bodie: which same is the caus why the grandules placed about the tongue above and below, are swoln hard & round, no otherwise then scrophulous or meazled swine. Lastly, all their face riseth in red

The beginning of a Leprosie.
The increas.
The state.
The declension.
The first sign of the Leprosie.
II.
III.
IV.
Why it is called *morbus Leoninus*.
V.
VI.
VII.
VIII.

bunches or puſhes, and is over-ſpread with a duskie and obſcure redneſs; the eies are fierie, fierce and fixed, by a melancholick chachectick diſpoſition of the whole bodie, manifeſt ſigns whereof appear in the face by reaſon of the fore-mentioned cauſſes, yet ſom leprous perſons have their faces tinctured with a yellowiſh, others with a whitiſh color, according to the condition of the humor, which ſerv's for a *baſis* to the leprous malignitie. For hence Phyſicians affirm that there are three ſorts of Leproſies; one of a reddiſh black color, conſiſting in a melancholick humor; another of a yellowiſh green, in a cholerick humor; another in a whitiſh yellow, grounded upon aduſt phlegm. IX. The ninth ſign is a ſtinking of the breath, as alſo of all the excrements proceeding from leprous bodies, by reaſon of the malignitie conceived in the humors. X. The tenth is, a hoarſneſs, a ſhakeing, harſh and obſcure voice, comming as it were out of the noſe, by reaſon of the lungs, recurrent nervs, and muſcles of the throttle tainted with the groſneſs of a virulent and aduſt humor; the fore-mentioned conſtriction and obſtruction of the inner paſſage of the noſe; and laſtly, the aſperitie and inequalitie of the weazon by immoderate drineſs, as it happen's to ſuch as have drunk plentifully of ſtrong wines without anie mixture. This immoderate drineſs of the muſcles ſerving for reſpiration make's them to bee troubled with a difficultie of breatheing. XI. The eleventh ſign is verie obſervable, which is a morphew or defedation of all the skin, with a drie roughneſs and grainie inequalitie, ſuch as appear's in the skins of plucked geeſ, with manie tetters on everie ſide, a filthie ſcab, and ulcers not caſting off onely a brain-like ſcurf, but alſo ſcales and cruſts. The cauſ of this drie ſcab is the heat of the burning bowels and humors unequally contracting and wrinkling the skin, no otherwiſe then as leather is wrinkled by the heat of the ſun or fire. The cauſ of the filthie ſcab and ſerpiginous ulcers, is the eating and corrodeing condition of the melancholick humor, and the venenate corruption, it alſo beeing the autor of corruption, ſo that it may bee no marvell if the digeſtive facultie of the liver beeing ſpoiled, the aſſimilative of a malign and unfit matter ſent into the habit of the bodie cannot well nor fitly perform that which may bee for the bodie's good. XII. The twelfth is, the ſenſ of a certain pricking, as it were of goads or needles over all the skin, cauſſed by an acrid vapor hindred from paſſing forth, and intercepted by the thickneſs of the skin. XIII. The thirteenth is a conſumption and emaciation of the muſcles which are between the thumb and fore-finger, not onely by reaſon that the nouriſhing and aſſimilating faculties want fit matter wherewith they may repair the loſs of theſe parts, for that is common to theſe with the reſt of the bodie; but becauſ theſe muſcles naturally riſe up unto a certain mountanous tumor, therfore their depreſſion is the more manifeſt. And this is the cauſ that the ſhoulders of leprous perſons ſtand out like wings; to wit, the emaciation of the inward part of the muſcle *Trapozites*. XIV. The fourteenth ſign is, the diminution of ſenſ, or a numneſs over all the bodie by reaſon that the nervs are obſtructed by the thickneſs of the melancholick humor hindring the free paſſage of the animal ſpirit, that it cannot com to the parts that ſhould receiv ſenſ, theſe in the *interim* remaining free which are ſent into the muſcles for motion's ſake, and by this note I chiefly make trial of leprous perſons, thruſting a ſom-what long and thick needle ſom-what deep into the great tendon endued with moſt exquiſite ſenſ, which run's to the heel, which, if they do not well feel, I conclude, that they are certainly leprous. Now, for that they thus loſe their ſenſ, their motion remaining entire, the cauſ hereof is, that the nervs which are diſſeminated to the skin are more affected, and thoſe that run into the muſcles are not ſo much; and therefore when as you prick them ſomwhat deep, they feel the prick, which they do not in the ſurface of the skin. XV. The fifteenth is, the corruption of the extreme parts poſſeſſed by putrefaction and a gangrene, by reaſon of the corruption of the humors ſent thither by the ſtrength of the bowels, infecting with the like tainture the parts wherein they remain: add hereto that the animal ſenſitive facultie is there decaied, and as often as anie facultie hath forſaken anie part, the reſt preſently after a manner neglect it. XVI. The ſixteenth is, they are troubled with terrible dreams, for they ſeem in their ſleep to ſee divels, ſerpents, dungeons, graves, dead bodies, and the like, by reaſon of the black vapors of the melancholick humor troubling the phantaſie with black and diſmal viſions, by which reaſon alſo ſuch as are bitten of a mad dog fear the water. XVII. The ſeventeenth is, that at the beginning and increaſ of the diſeaſ they are ſubtil, craftie and furious by reaſon of the heat of the humors and blood; but at length in the ſtate and declenſion they becom craftie and ſuſpicious, the heat and burning of the blood and entrails decaying by little and little; therefore then fearing all things whereof there is no cauſ, and diſtruſting of their own ſtrength, they endeavor by craft maliciouſly to circumvent thoſe with whom they deal, for that they perceiv their powers to fail them. XVIII. The eighteenth is, a deſire of venerie above their nature, both for that they are inwardly burned with a ſtrange heat, as alſo by the mixture of flatulencies therewith (for whoſe generation the melancholick humor is moſt fit) which are agitated, and violently carried through the veins and genital parts by the preternatural heat; but at length, when this heat is cooled, and that they are fallen into an hot and drie diſtemper, they mightily abhor venerie, which then would bee verie hurtful to them, as it alſo is at the beginning of the diſeaſ, becauſ they have ſmall ſtore of ſpirits and native heat, both which are diſſipated by venerie. XIX. The nineteenth

is,

is, the ſo great thickneſs of their groſs and livid blood, that if you waſh it, you may finde a ſandie matter therein, as ſom have found by experience, by reaſon of the great aduſtion and aſſation thereof. The twentieth is, the languidneſs and weakneſs of the pulſ (by reaſon of the oppreſſion of the vital and pulſifick facultie by a cloud of groſs vapors.) Herewith alſo their urine ſomtimes is thick and troubled, like the urine of carriage-beaſts, if the urinarie veſſels bee permeable and free; otherwiſe it is thin, if there bee obſtruction, which onely ſuffer's that which is thin to flow forth by the urinarie paſſages; now the urine is oftentimes of a pale aſh-color, and oftimes it ſmell's like as the other excrements do in this diſeaſ. Verily there are manie other ſigns of the Leproſie, as the ſlowneſs of the bellie by reaſon of the heat of the liver, often belchings by reaſon that the ſtomach is troubled by the reflux of a melancholick humor, frequent ſneeſing by reaſon of the fulneſs of the brain; to theſe, this may bee added moſt frequently, that the face and all the skin is unctuous or greaſie, ſo that water poured thereon, will not in anie place adhere thereto: I conceiv it is by the internal heat diſſolving the fat that lie's under the skin, which therefore alwaies look's as if it were greaſed or annointed therewith in leprous perſons. Now of theſe fore-mentioned ſigns, ſom are univocal, that is, which truly and neceſſarily ſhew the Leproſie: other-ſom are equivocal or common, that is, which conduce as well to the knowledg of other diſeaſes as this. To conclude, that aſſuredly is a Leproſie which is accompanied with all, or certainly the moſt part of theſe fore-mentioned ſigns.

XX.

Why their faces ſeem to bee greaſie.

## CHAP. VIII.

*Of Prognoſticks in the Leproſie; and how to provide for ſuch as ſtand in fear thereof.*

THe Leproſie is a diſeaſ which paſſeth to the iſſue, as contagious almoſt as the Plague, ſcarce cureable at the beginning, incureable when as it is confirmed, becauſ it is a *Cancer* of the whole bodie; now if ſom one *Cancer* of ſome one part ſhall take deep root therein, it is judged incureable. Furthermore, the remedies which to this day have been found out againſt this diſeaſ, are judged inferior and unequal in ſtrength thereto. Beſides, the ſigns of this diſeaſ do not outwardly ſhew themſelvs before that the bowels bee ſeized upon, poſſeſſed and corrupted by the malignitie of the humor, eſpecially in ſuch as have the white Leproſie, ſundrie of which you may ſee about Burdeaux, and in little Brittain, who notwithſtanding inwardly burn with ſo great heat, that it will ſuddenly wrinkle and wither an apple held a ſhort while in their hand, as if it had laid for manie daies in the ſun. There is another thing that increaſeth the difficultie of this diſeaſ, which is an equal pravitie of the three principal faculties whereby life is preſerved. The deceitful and terrible viſions in the ſleep, and numneſs in feeling, argue the depravation of the animal facultie; now the weakneſs of the vital facultie is ſhewed by the weakneſs of the pulſ, the obſcuritie of the hoarſ and jarring voice, the difficultie of breatheing, and ſtinking breath; the decay of the natural is manifeſted by the depravation of the work of the liver in ſanguification, whence the firſt and principal cauſ of this harm ariſeth. Now becauſ wee cannot promiſe cure to ſuch as have a confirmed Leproſie; and that wee dare not do it to ſuch as have been troubled therewith but for a ſhort ſpace, it remain's that wee briefly ſhew how to free ſuch as are readie to fall into ſo fearful a diſeaſ. Such therefore muſt firſt of all ſhun all things in diet and courſ of life, whereby the blood and humors may bee too vehemently heated, wherof wee have formerly made ſom mention. Let them make choice of meats of good or indifferent juice, ſuch as wee ſhall deſcribe in treating of the diet of ſuch as are ſick of the plague; purgeing, bleeding, batheing, cupping, to evacuate the impuritie of the blood, and mitigate the heat of the liver, ſhall bee preſcribed by ſom learned Phyſician. *Valeſius de Tarenta* much commend's gelding in this caſe, neither do I think it can bee diſliked. For men ſubject to this diſeaſ may bee effeminated by the amputation of their teſticles, and ſo degenerate into a womaniſh nature, and the heat of the liver boiling the blood, beeing extinguiſhed, they becom cold and moiſt, which temper is directly contrarie to the hot and drie diſtemper of leprous perſons; beſides the leprous beeing thus deprived of the facultie of generation, that contagion of this diſeaſ is taken away which ſpreadeth, and is diffuſed amongſt mankinde by the propagation of their iſſue.

Why the Leproſie is incurable.

The cure.

The diet.

Gelding good againſt the leproſie.

*The end of the twentieth Book.*

# Of *Poiſons*, and of the *Biteing* of a mad Dog, and the *Biteings* and *Stingings* of other venemous Creatures.

## *The one and twentieth Book.*

### CHAP. I.

*The cauſ of writeing this Treatiſe of Poiſons.*

Five reaſons have principally mooved mee to undertake to write this Treatiſe of Poiſons, according to the opinion of the Antients. The firſt is, that I might inſtruct the Surgeon what remedies muſt preſently bee uſed to ſuch as are hurt by poiſons, in the *interim* whil'ſt greater means may bee expected from a Phyſician. The ſecond is, that hee may know by certain ſigns & notes ſuch as are poiſoned or hurt by poiſonous means, and ſo make report thereof to the Judges, or to ſuch as it may concern. The third is, that thoſe Gentlemen and others who live in the countrie, and far from Cities, and ſtore of greater means, may learn ſomthing by my labors by which they may help their friends bitten by an Adder, mad Dog, or other poiſonous creature, in ſo dangerous, ſudden and uſual a caſe. The fourth is, that everie one may beware of poiſons, and know their ſymptoms when preſent, that beeing known, they may ſpeedily ſeek for a remedie. The fifth is, that by this my labor all men may know what my good will is, and how well minded I am towards the common-wealth in general, and each man in particular, to the glorie of God. I do not here ſo much arm malicious and wicked perſons to hurt, as Surgeons to provide to help and defend each man's life againſt poiſon; which they did not underſtand, or at leaſt ſeemed not ſo to do, which takeing this my labor in evil part, have maliciouſly interpreted my meaning.

What is to bee accounted poiſon.

But now at length, that wee may com to the matter; I will begin at the general diviſion of poiſons, and then handle each *ſpecies* thereof ſeverally: but firſt let us give this rule, That poiſon is that which either outwardly applied or ſtruck in, or inwardly taken into the bodie, hath power to kill it, no otherwiſe, then meat well dreſt is apt to nouriſh it. For *Conciliator* write's, that the properties of poiſon are contrarie to nouriſhments in their whole ſubſtance; for as nouriſhment is turned into blood, and in each part of the bodie whereto it is applied to nouriſh, by perfect aſſimilation is ſubſtituted in the place of that portion which flow's away each moment. Thus on the contrarie poiſon turn's our bodies into a nature like it ſelf and venenate, for as everie agent imprint's the force and qualities thereof in the ſubject patient, thus poiſon by the immoderation of faculties in their whole nature contrarie to us, changeth our ſubſtance into its nature, no otherwiſe then fire turneth chaff in a moment into its own nature, and ſo conſume's it. Therefore it is truly delivered by the Antients, who have diligently pried into the faculties of natural things, that it is poiſon that may kill men by deſtroying and corrupting their temper, and the compoſure and conformation of the bodie. Now all poiſons are ſaid to proceed either from the corrupt air, or from living creatures, plants and minerals, or by an artificial malignitie in diſtilling, ſubliming and diverſly mixing of poiſonous and fuming things. Hence ariſe ſundrie differences of poiſons; neither do they all work after the ſame manner: for ſom corrupt our nature by the unmeaſureableneſs of the manifeſt and elementarie qualities whereof they conſiſt, others from a ſpecifick and occult propertie. Hence it is that ſom kill ſooner then other-ſom; neither is it true, that all of them preſently aſſail the heart, but others are naturally at deadlie ſtrife with other parts of the bodie, as *Cantharides* with the bladder, the ſea-Hare with the lungs, the *Torpedo* with the hands, which it ſtupefieth, though the fiſhers rod bee betwixt them. Thus of medicines, there are ſom which are apt preſently to comfort and ſtrengthen the heart; others the brain, as *ſtœchas*; others the ſtomach, as cinnamon: Alſo there are ſom poiſons which work both waies, that is, by manifeſt and occult qualities, as *Euphorbium*; for that both by the exceſſive heat and the whole ſubſtance, or the diſcord of the whole ſubſtance with ours, corrupt's our nature. An argument hereof is, that Treacle, which by its qualitie is manifeſtly hot, infringeth the force thereof, as alſo of all others of an occult propertie. Poiſons which work by an occult and ſpecifick propertie, do not there-

The differences of poiſon.

All poiſons have not a peculiar antipathie with the heart.

fore

fore do it, becauſ they are too immoderately hot, cold drie, moiſt; but for that they are abſolutely ſuch, and have that eſſence from the ſtarrs and celeſtial influence, which is apt to diſſolv and deſtroie the ſtrength of man's bodie, becauſ beeing taken, but even in a ſmal quantitie, yet are they of ſo pernicious a qualitie, that they kill almoſt in a moment. Now poiſons do not onely kill beeing taken into the bodie, but ſom beeing put or applied outwardly; neither do venemous creatures onely harm by their ſtinging and biteing, but alſo by their excrements, as ſpittle, blood, the touch and breath.

## CHAP. II.

*How poiſons beeing ſmall in quantitie, may by their onely touch cauſ ſo great alterations.*

IT ſeemeth ſtrange to manie, how it may com to paſs, that poiſon taken or admitted in a ſmall quantitie, may almoſt in a moment produce ſo pernicious effects over all the bodie, and all the parts, faculties, and actions, ſo that beeing admitted but in a little quantitie, it ſwell's up the bodie into a great bigneſs. Neither ought it to ſeem leſs ſtrange, how Antidotes and Counterpoiſons, which are oppoſed to poiſon, can ſo ſuddenly break and weaken the great and pernicious effects thereof, beeing it is not likely that ſo ſmall a particle of poiſon or Antidote can divide it ſelf into ſo manie, and ſo far ſever'd particles of our bodie. There are ſom (ſaith *Galen*) who think that ſom things by touch onely, by the power of their qualitie, may alter thoſe things which are next to them; and that this appear's plainly in the fiſh *Torpedo*, as that which hath ſo powerful a qualitie, that it can ſend it along'ſt the fiſher's rod to the hand, and ſo make it becom torped or numb. But on the contrarie, Philoſophers teach, that accidents, ſuch as qualities are, cannot without their ſubjects remove and diffuſe themſelvs into other ſubjects. Therefore *Galen's* other anſwer is more agreeable to reaſon, that ſo manie and great affects of poiſons and remedies ariſe either from a certain ſpirit or ſubtil humiditie; not truly, for that this ſpirit and ſubtil humiditie may bee diſperſed over the whole bodie and all the parts thereof which it affect's, but that little, which is entred the bodie, as caſt in by the ſtroak of a Spider, or the ſting of a Scorpion, infect's and corrupt's all the next parts by contagion with the like qualitie, theſe others that are next to them, until from an exceeding ſmall portion of the blood, if the ſtroak ſhall light into the veins, it ſhall ſpread over the whole maſs of blood; or of phlegm, if the poiſon ſhall chance to com to the ſtomach, and ſo the force thereof ſhall bee propagated and diffuſed over all the humors and bowels. The doubt of Antidotes is leſs, for theſe beeing taken in greater quantitie, when they ſhall com into the ſtomach, warmed by the heat of the place, they becom hot, and ſend forth vapors, which ſuddenly diffuſed over the bodie by the ſubtiltie of their ſubſtance, do by their contrarie forces dull and weaken the malignitie of the poiſon. Wherefore you may often ſee when as Antidotes are given in leſs quantitie then is fit, that they are leſs prevalent, neither do they anſwer to our expectation in overcomming the malignitie of the poiſon; ſo that it muſt neceſſarily follow that theſe muſt not onely in qualities, but alſo in quantitie bee ſuperior to poiſons.

*Cap. 5. lib. 6. de loc. affect.*

The true reaſon of the wondrous effects of poiſons.

## CHAP. III.

*Whether there bee anie ſuch poiſons as will kill at a ſet time?*

TO the propounded queſtion; whether there may bee poiſons which within a certain and definite time (put caſe a month or year) may kill men. *Theophraſtus* thus anſwer's; of poiſons, ſom more ſpeedily perform their parts, others more ſlowly; yet may you finde no ſuch as will kill in ſet limits of time, according to the will and deſire of men. For that ſom kill ſooner or later then others; they do not this of their own or proper nature, as Phyſicians rightly judg, but becauſ the ſubject upon which they light, doth more or leſs reſiſt or yeeld to their efficacie. Experience ſheweth the truth hereof; for the ſame ſort of poiſon in the ſame weight and meaſure given to ſundrie men of different tempers and complexions, will kill one in an hour, another in ſix hours, or in a daie, and on the contrarie will not ſo much as hurt ſom third man. You may alſo obſerv the ſame in purgeing medicines. For the ſame purge given to diverſ men in the ſame proportion, will purge ſom ſooner, ſom later, ſom more ſparingly, others more plentifully, and otherſom not at all; alſo with ſom it will work gently, with otherſom with pain and gripeings. Of which diverſitie, there can no other cauſ bee aſſigned, then men's different natures in complexion and temper, which no man can ſo exactly know and comprehend, as to have certain knowledg thereof, as how much and how long the native heat can reſiſt and labor againſt the ſtrength of the poiſon, or how pervious or open the paſſages of the bodie may bee, whereby the poiſon may arrive at the heart and principal parts. For in ſuch (for example

No poiſons kill in a ſet time.

How poiſons com ti kill ſooner or later.

xample ſake) as have the paſſages of their arteries more large, the poiſon may more readily & ſpeedily enter into the heart toꝫether wᵗʰ the air that is continually drawn into the bodie.

## CHAP. IV.

*Whether ſuch creatures as feed upon poiſonous things bee alſo poiſonous; and whether they may bee eaten ſafely and without harm.*

Such things as feed upon poiſon may bee eaten without danger.

DUcks, Storks, Herns, Peacocks, Turkies, and other birds, feed upon Toads, Vipers, Aſps, Snakes, Scorpions, Spiders, Caterpillers, and other venemous things. Wherefore it is worthie the queſtioning, whether ſuch like creatures nouriſhed with ſuch food, can kill or poiſon ſuch perſons as ſhall afterward eat them? *Matthiolus* write's that all late Autors, who have treated of poiſons, to bee abſolutely of this opinion, That men may ſafely and without anie danger feed upon ſuch creatures, for that they convert the beaſts into their nature after they have eaten them, and on the contrarie are not changed by them. This reaſon though verie probable, yet doth it not make theſe beaſts to bee wholly harmleſs, eſpecially if they bee often eaten or fed upon. *Dioſcorides* and *Galen* ſeem to maintain this opinion, whereas they write, that the milk, which is nothing elſ then the relented blood of ſuch beaſts as feed upon ſcammonie, hellebore and ſpurge, purgeth violently. Therefore Phyſicians, deſireous to purge a ſucking childe, give purges to the nurſes, whence the milk becomming purgeing, becom's both meat and medicine to the childe. The fleſh of thruſhes, which feed upon Juniper-berries, ſavor's of Juniper. Birds that are fed with worm-wood or garlick, either taſte bitter, or have the ſtrong ſent of garlick. Whiteings taken with garlick, ſo ſmell thereof, that they will not forego that ſmell or taſte by anie ſalting, frying or boiling; for which ſole reaſon, manie who hate garlick, are forced to abſtain from theſe fiſhes. The fleſh of Rabbits that feed upon pennie-royal and juniper, ſavor of them; Phyſicians wiſh that Goats, Cows and Aſſes, whoſe milk they would uſe for Conſumptions or other diſeaſes, ſhould bee fed ſom ſpace before, and everie daie wᵗʰ theſe or theſe herbs wᶜʰ they deem fit for the cureing of this or that diſeaſ.

*Lib. de ſimp. facult.*

For *Galen* affirm's that hee doubt's not, but that in ſucceſs of time the fleſh of creatures will bee changed by the meats whereon they feed, and at length ſavor thereof. Therefore I do not allow that the fleſh of ſuch things as feed upon venemous things, ſhould bee eaten for food, unleſs it bee ſom long ſpace after they have diſuſed ſuch repaſte, and that all the venom bee digeſted and overcom by the efficacie of their proper heat, ſo that nothing thereof may remain in taſte, ſmell or ſubſtance, but bee all vaniſhed away. For manie die ſuddenly, the cauſ of whoſe deaths are unknown, which peradventure was from nothing elſ, but the ſympathie and antipathie of bodies, for that theſe things cauſ death and diſeaſ to ſom, that nouriſh otherſom [according to our vulgar Engliſh proverb; *That which is one man's meat, is another man's poiſon.*]

The occaſion of ſudden death in manie.

## CHAP. V.

*The general ſigns of ſuch as are poiſoned.*

Common ſigns of ſuch as are poiſoned.

WEe will firſt declare what the general ſigns of poiſon are, and then wee will deſcend to particulars, whereby wee may pronounce that one is poiſoned with this or that poiſon. Wee certainly know that a man is poiſoned, when as hee complain's of a great heavineſs of his whole bodie, ſo that he is wearie of himſelf; when as ſom horrid and loathſom taſte ſweat's out from the orifice of the ſtomach to the mouth and tongue, wholly different from that taſte; that meat, howſoever corrupted, can ſend up: when as the color of the face changeth ſuddenly, ſomwhiles to black, ſom times to yellow, or anie other color, much differing from the common cuſtom of man; when nauſeouſneſs with frequent vomiting, troubleth the patient, and that hee is moleſted with ſo great unquietneſs, that all things may ſeem to bee turned upſide down. Wee know that the poiſon work's by the proper, and from the whole ſubſtance, when as without anie manifeſt ſenſ of great heat or coldneſs, the patient ſwound's often with cold ſweats, for uſually ſuch poiſons have no certain and diſtinct part wherewith they are at enmitie, as *cantharides* have with the bladder. But as they work by their whole ſubſtance, and an occult proprietie of form; ſo do they preſently and directly aſſail the heart, our eſſence and life, and the fortreſs and beginning of the vital faculties. Now will wee ſhew the ſigns whereby poiſons, that work by manifeſt and elementarie qualities, may bee known. Thoſe who exceed in heat, burn or make an impreſſion of heat in the tongue, the mouth, throat, ſtomach, guts, and all the inner parts, with great thirſt, unquietneſs, and perpetual ſweats. But if to their exceſs of heat they bee accompanied with a corrodeing and putrefying qualitie, as Arſenick, *Sublimate*, Roſe-ager or Ratſ-bane, Verdegreace, Orpiment, and the like, they then cauſ in the ſtomach

Signs of hot poiſons.

ſtomach and guts intolerable pricking pains, rumblings in the b.llie, and continual and intolerable thirſt. Theſe are ſucceeded by vomitings, with ſweats ſomwhiles hot, ſomwhiles cold, with ſwoundings, whence ſudden death enſue's. Poiſons that kill by too great coldneſs, induce a dull or heavie ſleep, or drowzineſs, from which you cannot eaſily rouz or waken them; ſomtimes they ſo trouble the brain, that the patients perform manie undecent geſtures and antick tricks with their mouths and eies, arms and legs, like as ſuch as are frantick; they are troubled with cold ſweats, their faces becom blackiſh or yellowiſh, alwaies ghaſtlie, all their bodies are benummed, and they die in a ſhort time unleſs they bee helped; poiſons of this kinde are Hemlock, Poppie, Night-ſhade, Henbane, Mandrag. Drie poiſons are uſually accompanied by heat with moiſture, for although *ſulphur* bee hot and drie, yet hath it moiſture, to hold the parts together, as all things which have a conſiſtence have; yet are they called drie, by reaſon that drineſs is predominant in them: ſuch things make the tongue and throat drie and rough, with unquenchable thirſt; the bellie is ſo bound, that ſo much as the urine cannot have free paſſage forth; all the members grow ſqualid by drineſs, the patients cannot ſleep: poiſons of this kinde are Lytharge, Ceruſs, Lime, ſcales of Braſs, fileings of Lead, prepared antimonie. On the contrarie, moiſt poiſons induce a perpetual ſleep, a flux or ſcouring the reſolution of all the nervs and joints, ſo that not ſo much as the eies may bee faithfully contained in their orbs, but will hang as readie to fall out; the extreme parts, as the hands, feet, noſe and ears corrupt and putrefie, at which time they are alſo troubled with thirſt by reaſon of their ſtrong heat, alwaies the companion of putrefaction, and oftimes the autor thereof: now when this commeth to paſs, death is at hand. Verie manie denie that there can bee anie moiſt poiſons found, that is, ſuch as may kill by the efficacie of their humiditie, becauſ there are no ſuch things to bee found, as may com to the fourth degree of moiſture. Yet there is an example that averr's the contrarie, which was of one, who ſleeping on the night, was bitten by a Serpent, as *Gilbertus Anglicus* affirmeth; for dying thereof, when as his ſervant, deſirous to awaken his Maſter out of his ſleep, took him by the arm, all the fleſh beeing putrefied, fell off, and preſently the bones alſo fell aſunder, beeing deprived of their fleſh, which could not happen, unleſs by exceſs of the venemous humiditie which lay hidden in the teeth and ſpittle of the ſerpent. Alſo wee have found it noted by *Hippocrates*, that in a rainie, humid and ſoutherly conſtitution of the year, it happened by the malign violence of the venenate and putrefying humiditie, that the fleſh of the arms and legs becomming rotten, fell away by peece-meal, and the bones remained bare; yea alſo and the bones themſelvs in ſom putrefied and fell away; neither doth the *Lues Venerea* kill by anie other means, then by a fretting and putrefying force of humiditie, by whoſe efficacie the ſoliditie of the bones is diſſolved; then much more the fleſh may bee tainted and conſumed by putrefaction.

Signs of cold poiſons.

Signs of drie poiſons.

Signs of moiſt poiſons.

An hiſtorie.

*Sect.3.lib.3 epid.*

The *Lues Venerea* kill's by exceſs of moiſture.

To theſe and ſuch poiſons which work by a manifeſt and elementarie facultie, when as they ſhall bee received into the bodie after what manner ſoever, you ſhall forthwith oppoſe their contraries, and if by chance it bee not manifeſt, what, and of what diſtinct kinde of poiſon that is, you muſt know that ſuch poiſons as work by occult properties, it is not by reaſon as yet found out how they will affect the bodie, but onely by experience. Therefore to theſe you muſt oppoſe their like antidotes, which may by their whole ſubſtance ſtrengthen the heart and vital facultie, and withſtand the ſtrength of the poiſon. But to this our diſtinction of poiſons, working by a manifeſt and elementarie qualitie, their opinion is contrarie, who affirm that the venom of all poiſonous beaſts are therefore cold, for that ſuch as are bitten or ſtung with them, are forthwith felt to bee colder then a ſtone. And that ſerpents for fear of cold, when as winter is at hand, keep themſelvs in holes and dens under ground, or elſ, as vipers uſe to do, lie under ſtones; under which, you may often finde them ſtiff and numb, and ſo unapt for motion, that you may eaſily take them up in your hand. But the coldneſs that is perceived or felt in ſuch as are bitten or ſtung, is not occaſioned by the coldneſs of the poiſon, but by the abſence of the natural heat, withdrawing it ſelf in the verie inſtant of the ſtroak, from the ſurface into the center of the bodie, both for the defence of the heart, as the principal part; as alſo for that there is nothing which ſo much diſſipate's, or ſo much oppugn's the vital heat, as poiſon, of what kinde ſoever it bee, doth.

All poiſons are not cold.

Why ſuch, as are poiſoned or ſtung, are cold.

## CHAP. VI.

*How, or by what means to ſhun, or eſchew Poiſons.*

IT is a matter of much difficultie to avoid poiſons, becauſ ſuch as at this time temper them, are ſo throughly prepared for deceit and miſchief, that they will deceiv even the moſt warie and quick-ſighted; for they ſo qualifie the ingrate taſte and ſmell, by the admixture of ſweet and well-ſmelling things, that they cannot eaſily bee perceived even by the skilful. Therefore ſuch as fear poiſoning, ought to take heed of meats cooked with much art, verie ſweet, ſalt, ſowr, or notably endued with anie other taſte. And when they are oppreſt with hunger or thirſt, they

What, ſuch as fear poiſoning, muſt obſerv in their diet.

they muſt not eat nor drink too greedily, but have a diligent regard to the taſte of ſuch things as they eat or drink; beſides, before meat let them take ſuch things as may weaken the ſtrength of the poiſons; ſuch as is the fat broth of good nouriſhing fleſh-meats; in the morning let them arm themſelvs with treacle or mithridate, and conſerv of roſes, or the leavs of rue, a walnut and drie figs; beſides, let him preſently drink a little draught of muſkedine or ſom other good wine; when one ſuſpects hee hath taken any poiſon in meat or drink, let him forbear ſleeping. For beſides that the force of poiſon is oft times ſo rapid, that it conſume's our life in a ſhort ſpace, as fire doth ſtubble, as alſo for that it is drawn more inwardly into the ſecret paſſages of the bodie by ſleep. Wherefore in ſuch a caſe it is better to procure vomit by drinking *Hydræleum* warm, or butter diſſolved in warm oil, or a decoction of line, or fenugreek-ſeeds, or fat broth, for thus the received poiſon is alſo caſt forth therewith, or elſ the acrimonie thereof retunded, and the bellie looſed.

Why ſleep is hurtfull.

Why and how vomit muſt bee procured.

You may ſee this by dailie experience, for cauſticks, veſicatories, and the like acrid things beeing applied to an anointed part, will not bliſter nor exulcerate the part. Neither doth the vomit conduce onely in this, that it excludeth the poiſon, but it ſhew's either by the taſte, ſmell, or color, the kinde of the taken-poiſon; ſo that then by uſeing the proper Antidote, it may bee the more eaſily and ſpeedily reſiſted, yet notwithſtanding if you conceiv that the poiſon have deſcended deeper in the Guts, you may with a glyſter draw away the reſt thereof which adher's to the coats of the Guts. But if the patient cannot vomit, then ſhall ſom purgeing medicine bee given him forthwith, and ſuch as are thought more particularly to reſiſt poiſon, ſuch as are Agarick, Aloës, the leſſer Centaurie, Rubarb and other things, according to the direction of the learned Phyſician. Then ſhall you adminiſter glyſters made with *Caſſia*, fattie decoctions, ſheep-ſuet, or butter or Cowſ-milk, with the mucilages of Line-ſeed, *pſilium*-ſeeds, quince-ſeeds, and other ſuch things as are uſually given in a Dyſenterie, or bloodie flux, that ſuch things may hinder the adheſion of the poiſon to the coats of the Guts, and by their unctuouſneſs retund the acrimonie of the poiſon, and mitigate if anie thing ſhall alreadie bee ulcerated, and abſolutely defend the ſound parts from the malign effects of the poiſon. But let this bee a perpetual rule, That the poiſon bee ſpeedily drawn back by the ſame way it entred into the bodie; as, if it entred by ſmelling in at the noſtrils, let it bee drawn back by ſneeſing, if by the mouth into the ſtomach, let it bee excluded by vomit; if by the fundament into the bellie, then by glyſter; if by the privities into the womb, then by *metrenchites* or injections made thereinto; if by a bite, ſting or wound, let revulſion bee made by ſuch things as have a powerful attractive facultie; for thus wee make diverſions, that by theſe wee may not onely hinder the poiſon from aſſailing the heart, but alſo that by this means wee may draw it from within outwards. Wherefore ſtrong ligatures caſt about the arms, thighs and legs, are good in this caſe. Alſo large cupping glaſſes applied with flame to ſundrie parts of the bodie are good. Alſo bathes of warm water, with a decoction of ſuch things as reſiſt poiſon, ſouthern-wood, calamint, rue, betonie, horehound, pennie-royall, bayes, *ſcordium*, ſmallage, ſcabious, mints, valerian, and the like, are good in this caſe. Alſo ſweats are good, beeing provoked ſo much as the ſtrength of the patient can endure. But if hee bee verie wealthie, whom wee ſuſpect poiſoned, it will bee ſafer to put him into the bellie of an ox, horſ or mule, and then preſently into another aſſoon as the former is cold, that ſo the poiſon may bee drawn forth by the gentle and vaporous heat of the new killed beaſt; yet do none of theſe things without the advice of a Phyſician, if it may conveniently bee had.

When and wherewith they ſhall bee purged.

The cure of poiſoned wounds.

## CHAP. XIIII.

*How the corrupt or venemous Air may kill a Man.*

By how manie, and what means the air may bee infected.

THE air is infected and corrupted by the admixture of malign vapors, either ariſeing from the unburied bodies of ſuch as are ſlain in great conflicts, or exhaleing out of the earth after earth-quakes, for the air, long pent up in the cavities and bowels of the earth, and deprived of the freedom & commerce of the open air, is corrupted, and acquires a malign qualitie, which it preſently tranſferreth unto ſuch as meet therewith. Alſo there is a certain malignitie of the air, which accompanieth thunders, and lightnings, which ſavours of a ſulphureous virulencie, ſo that whatſoever wilde beaſts ſhall devour the creatures killed therewith, they becom mad, and die immediately; for the fire of lightning hath a far more rapid, ſubtil, and greater force then other fires, ſo that it may rightly bee termed a Fire of Fires.

How thunders and lightnings may infect the air.

An argument hereof is, that it melteth the head of a ſpear, not harming the wood, and ſilver and gold, not hurting the purſ wherein it is contained. Alſo the air is infected by fumigations, which preſently admitted into the bodie and bowels by the mouth and noſe in reſpiration, by the skin and arteries in perſpiration, doth eaſily kill the ſpirits and humors beeing firſt infected, and then within a ſhort ſpace after, the ſolid ſubſtance of the principal parts, and chiefly of the heart beeing turned into their nature, unleſs the man bee firſt provided

provided for by sneesing, vomiting, sweating, purgeing by the bellie, or som other excretion. For that poison which is carried into the bodie by smell, is the most rapid and effectuall, by so much as a vapor or exhalation is of more subtil and quicklier-piercing essence then an humor. Yet notwithstanding, wilt thou say, it is not credible, that anie bee kill'd by anie vapor raised by the force of fire, as of a torch, or a warming-pan, for that the venenate qualitie of the thing that is burnt, is dissipated and consumed by the force of the fire, purgeing and cleansing all things. This reason is falsly feigned to the destruction of the lives of careless people; for sulphureous brands kindled at a clear fire, do notwithstanding cast forth a sulphureous vapor. Whether do not *Lignum aloës* and Juniper, when they are burnt in a flame, smell less sweetly?

Whether the vapor that ariseth from a burnt thing may poison one.

Pope *Clement*, the seventh of that name, the uncle of our Kings mother, was poisoned by the fume of a poisonous torch that was carried lighted before him, and died thereof. *Mathiolus* telleth, that there were two Mountebanks in the market-place of *Sienna*, the one of which but smelling to a poisoned gillie-flower given him by the other, fell down dead presently.

An historie.

A certain man not long ago, when hee had put to his nose, and smelled a little unto a pomander, which was secretly poisoned, was presently taken with a *Vertigo*, and all his face swelled, and unless that hee had gotten speedie help by sternutatories and other means, hee had died shortly after of the same kinde of death that Pope *Clement* did.

The safest preservative against such poisons is, not to smell to them: moreover, som affirm, that there are prepared som poisons of such force, that beeing annointed but on the saddle, they will kill the rider, and others, that if you but annoint the stirrups therewith, they will send so deadlie poisonous a qualitie into the rider, through his boots, that hee shall die thereof within a short time after: which things, though they bee scarce credible, becaus such poisons touch not the naked skin, yet have they an example in nature, whereby they may defend themselvs. For the *Torpedo* send's a narcotick, and certainly deadly force into the arm, and so into the bodie of the fisher, the cords of the net beeing between them.

## CHAP. VIII.

*That everie kinde of poison hath its proper and peculiar Signs and Effects.*

AS poisons are distinct in *species*, so each *species* differ's in their signs and effects; neither is it possible to finde anie one kinde of poison, which may bee accompanied or produce all the signs and effects of all poisons, otherwise Physicians should in vain have written of the signs and effects of each of them, as also of their proper remedies and antidotes. For what kinde of poison shall that bee, which shall caus a burning heat in the stomach, bellie, liver, bladder and kidnies, which shall caus a hicketting, which shall caus the whole bodie to tremble and shake, which shall take away the voice and speech, which shall caus convulsions, shall weaken the pulsifick facultie, which shall intercept the freedom of breathing, which shall stupefie and cast into a dead sleep, which shall together, and at once caus a *Vertigo* in the head, dimness in the sight, a strangling, or stoppage of the breath, thirst, bleeding, fever, stoppage of the urine, perpetual vomiting, redness, lividness, and paleness of the face, resolutions of the powers, and manie other things, all which are caussed by all sorts of poison. Lastly, no bodie will denie but that hot poisons may kill more speedily then cold, for that they are more speedily actuated by the native heat.

Hot poisons kill sooner then cold.

## CHAP. IX.

*The Effects of poisons from particular venemous things, and what Prognosticks may thence bee made.*

IT is the opinion of *Cornelius Celsus*, and almost of all the Antients, that the bite of everie beast had som virulencie, but yet som more then other-som. They are most virulent that are inflicted by venemous beasts, as Asps, Vipers, Water-snakes, and all kindes of Serpents, Basilisks, Dragons, Toads, mad Dogs, Scorpions, Spiders, Bees, Wasps, and the like. They are less malign, which are of creatures wanting venom, as of Horses, Apes, Cats, Dogs not mad, and manie other things, which though of their own nature they are without poison, yet in their bites there is somthing more dolorifick and ill natured, then in common wounds inflicted by other occasions: I beleev, that in their slaver or *sanies*, there is somthing, I know not how to term it, contrarie to our nature, which imprint's a malign qualitie in the ulcer, which also you may observ in the tearings and scratchings of such creatures as have sharp claws, as Lions and Cats. Moreover manie affirm, that they have found by experience, that the bites of men are not altogether without virulencie, especially of such as are red-haired & freckled, chiefly

*Lib. 2. cap. 27.* The bites of all wilde beasts are virulent.

The bites of a red-haired man virulent.

when as they are angred; it is probable that the bites of other perſons want this malignitie, ſeeing that their ſpittle will cure ſmall ulcerations. Wherefore, if there ſhall happen difficultie of cure in a wound, cauſſed by a man's biteing, which is neither red haired nor freckled, neither angrie; this happen's not by means of the ſpittle, nor by anie malign qualitie, but by reaſon of the contuſion, cauſſed by the bluntneſs of the teeth, not cutting, but bruiſing the part, for beeing not ſharp, they cannot ſo eaſily enter the fleſh, unleſs by bruiſing and tearing, after the manner of heavie and blunt ſtrokes and weapons, wounds beeing occaſioned by ſuch are more hard to bee cured, then ſuch as are made by cutting and ſharp weapons. But of the fore-ſaid biteings of venemous creatures, there are few which do not kill in a ſhort ſpace, and almoſt in a moment, but principally if the poiſon bee ſent into the bodie by a live creature, for in ſuch poiſon there is much heat; alſo there is therein a greater tenuitie, which ſerv's as *vehicles* thereto into what place or part ſoever of the bodie they tend, the which the poiſons taken from dead creatures are defective of. Wherefore ſom of theſe kill a man in the ſpace of an hour, as the poiſon Aſps, Baſilisks and Toads; others not unleſs in two or three daies ſpace, as of water-Snakes; a Spider, and Scorpion require more time to kill, yet all of them admitted but in the leaſt quantitie, do in a ſhort ſpace cauſ great and deadlie mutations in the bodie, as if they had breathed in a peſtiferous air, and with the like violence, taint and change into their own nature all the members and bowels, by which theſe ſame members do in the time of perfect health change laudable meats into their nature and ſubſtance. The place whereas theſe poiſonous creatures live, and the time, conduce to the perniciouſneſs of the poiſon, for ſuch as live in drie, mountanous, and ſun-burnt places kill more ſpeedily then ſuch as bee in moiſt and mariſh grounds; alſo they are more hurtful in winter then in ſummer; and the poiſon is more deadly which proceed's from hungrie, angrie and faſting creatures, then that which com's from ſuch as are full and quiet; as alſo that which proceed's from young things, chiefly when as they are ſtimulated to venerie, is more powerful then that which com's from old and decrepit; from femals worſ then from males; from ſuch as have fed upon other venemous things, rather then from ſuch as have abſtained from them, as from ſnakes which have devoured toads, vipers which have fed upon ſcorpions, ſpiders and Caterpillers. Yet the reaſon of the efficacie of poiſons depend's from their proper, that is, their ſubtil or groſs conſiſtence, and the greater or leſs aptneſs of the affected bodie to ſuffer. For hot men that have larger and more open veins and arteries, yeeld the poiſon freer paſſage to the heart. Therefore they which have more cold and ſtraight veſſels, are longer ere they die of the like poiſon; ſuch as are full, are not ſo ſoon harmed as thoſe that are faſting: for meats, beſides that by filling the veſſels, they give not the poiſon ſo free paſſage, they alſo ſtrengthen the heart by the multiplication of ſpirits, ſo that it more powerfully reſiſt's pernicious venom. If the poiſon work by an occult and ſpecifick propertie, it cauſſeth the cure and prognoſtick to bee difficult, and then muſt wee have recourſ to Antidotes, as theſe which in their whole ſubſtance reſiſt poiſons; but principally to treacle, becauſ there enter into the compoſition thereof medicines which are hot, cold, moiſt and drie: whence it is, that it retund's and withſtand's all poiſons, chiefly ſuch as conſiſt of a ſimple nature, ſuch as theſe which com from venemous creatures, plants and minerals; and which are not prepared by the deteſtable art of empoiſoners.

Contuſed wounds harder to heal then ſuch as are cut.

Why treacle retund's the force of all ſimple poiſons.

## CHAP. X.

*What cure muſt bee uſed to the biteings and ſtingings of venemous beaſts.*

CUre muſt ſpeedily bee uſed without anie delaie to the bites and ſtingings of venemous beaſts, which may by all means diſperſ the poiſon, and keep it from entering into the bodie; for when the principal parts are poſſeſſed, it boot's nothing to uſe medicines afterwards. Therefore the Antients have propounded a double indication to lead us to the findeing out of medicines in ſuch a caſe, to wit, the evacuation of the virulent and venenate humor, and the change or alteration of the ſame and the affected bodie. But ſeeing evacuation is of two ſorts, to wit, *univerſal*, which is by the inner parts; and *particular*; which is by the outward parts. Wee muſt begin at the particular, by ſuch to pick medicines as are fit to draw out, and retund the venom; for wee muſt not alwaies begin a cure with general things, as ſom think, eſpecially in external diſeaſes, as wounds, fractures, diſlocations, venemous bites and punctures. Wherefore hereto as ſpeedily as you may, you ſhall applie remedies fit for the bites and punctures of venemous beaſts; as for example, the wounds ſhall bee preſently waſhed with urine, with ſea-water, *aqua vitæ*, or wine, or vineger wherein old treacle or muſtard ſhall bee diſſolved. Let ſuch waſhing bee performed verie hot, and ſtrongly chafed in, and then leav upon the wound and round about it, linnen rags, or lint ſteeped in the ſame liquor. There bee ſom who think it not fit to lay treacle thereto, becauſ, as they ſay, it drive's the poiſon in. But the authoritie of *Galen* convinceth that opinion, for hee writeth that if treacle bee applied to this kinde of wounds before

A double indication in the cure of venemous bites.

Lotions fit for venemous bites.

*Lib. de theriacâ.*

before that the venom ſhal arrive at the noble parts, it much conduceth. Alſo reaſon confutes it; for viper's fleſh enters the compoſition of treacle which attracts the venom by the ſimilitude of ſubſtance, as the Load-ſtone draweth iron, or Amber ſtraws. Moreover, the other ſimple medicines which enter this compoſition, reſolv and conſume the virulencie and venom, and beeing inwardly taken, it defendeth the heart and other noble parts, and corroborateth the ſpirits. Experience teacheth that mithridate fitly given in the ſtead of treacle worketh the like effect. The medicines that are taken inwardly and applied outwardly for evacuation, muſt bee of ſubtil parts, that they may quickly inſinuate themſelvs into everie part to retund the malignitie of the poiſon; wherefore garlick, onions, leeks, are verie good in this caſe, for that they are vaporous; alſo *ſcordium*, *Rue*, *dictamnus*, the leſſer Centaurie, hore-hound, *Rocket*, the milkie juice of unripe figs, and the like, are good; there is a kinde of wilde bugloſs amongſt all other plants, which hath a ſingular force againſt venemous bites, whence it is termed *Echium* and *viperinum*, and that for two cauſſes; the firſt is, becauſ in the purple flowers that grow amongſt the leav's, there is a reſemblance to the head of a viper or adder. Another reaſon is, becauſ it heal's the biting of a viper not onely applied outwardly, but alſo helpeth ſuch as are bitten, beeing drunk in wine, yea, and will not ſuffer thoſe that have lately drunk thereof to bee bitten at all. Wilde *Time* hath the like effect; though theſe oft-times agree with the poiſon in qualitie as in heat, yet do they help in diſcuſſing and reſolving it; yet, as much as wee may, wee muſt labor to have evacuation and alteration together. It is moſt convenient, if the part affected will permit, to applie large cupping-glaſſes with much flame and horns; alſo ſucking is good, the mouth beeing firſt waſhed in wine wherein ſome treacle is diſſolved, and with oil, leſt any thing ſhould adhere thereto, for it will hinder it, if ſo bee the mouth bee no where ulcerated. It is good alſo to applie horſ-leeches; ſom wiſh to applie to the wound, the fundaments of hens or turkies that lay egs, for that ſuch are opener behinde, firſt putting ſalt upon them that they may gape the wider, ſhutting their beaks and opening them now and then leſt they ſhould bee ſtifled, and ever and anon to ſubſtitute others inſtead of ſuch as die or are ſuffocated; for thus it is thought the poiſon is drawn forth, and paſſeth into the bird by the fundament. There bee others which had rather applie to the wound live birds cut aſunder in the midſt, and ſo laid to hot, for that they gheſs theſe reſiſt poiſon by a natural diſcord. But certainly it is by their heat whereby they do not onely digeſt toads, aſps, vipers, ſcorpions and other venemous things, but alſo wear aſunder and ſoften ſand, ſtones, and moſt drie and ſtonie ſeeds in their gizzards; wherefore wee muſt think them very good to draw out the poiſon and diſſipate it. But nothing is ſo forcible to diſperſ and retund the venom, as the impreſſion of cauteries, eſpecially actual, for a hot iron works more effectually and ſpeedily, and cauſſeth an ulcer which will remain open a longer time. Wherefore to cauſ the ſpeedier falling away of the Eſchar, you ſhall ſcarifie it to the quick, and then plentifully annoint the place. For thus the poiſon will the ſooner paſs forth. But this muſt bee done before the poiſon enter's far into the bodie, for otherwiſe Cauteries will not onely do no good, but further torment the patient, and weaken him to no purpoſe. Let drawing plaſters bee laid to the wound and neighboring parts, made of *Galbanum*, turpentine, black pitch, and other gummie and reſinous things. After the falling away of the Eſchar, *baſilicon* ſhall bee applied, quickned with a little *Precipitate*, for it is very effectual in theſe caſes, for that it draweth forth the virulent *ſanies* out of the bottom of the wound, neither doth it ſuffer the wound to bee cloſed ſpeedily. To which purpoſe they put in a piece of a ſpunge, or a root of Gentian or Hermodactyl, or ſom acrid medicine, as *ægyptiacum*, or *Precipitate* mixed with the powder of Alum, or a cauſtick beaten to powder. But you muſt alwaies obſerv this, that with your ointments you muſt alwaies mix ſom Treacle or Mithridate, or the juice of *hypericon*, or the like, which have power to attract and diſperſ the poiſon, and cleanſ the ulcer; yet if too vehement heat ſhall cauſ ſuch pain as is likely to bring a gangren by the diſſipation of the ſpirits, then neglecting the cure of the proper diſeaſ for a time, wee muſt labor to correct the ſymptom. But in this caſe you muſt obſerv this rule, that you let no blood, give no purgeing medicine, nor glyſter, nor vomit, nor uſe no bath, nor other thing that may procure ſweat, untill three daies bee paſt after the bite or ſting. In the mean ſpace let the patient ſhun all manner of labor, but chiefly venerie, leſt by cauſing an agitation of the humors, the poiſon get ſooner to the heart. Therefore then it is time to uſe univerſal evacuations, when as you ſhall ſuſpect that the poiſon is diffuſed over the veins and whole inner part of the bodie beſides. Before you ſhall give nothing, unleſs medicines of Treacle or Mithridate and the like things, which have a facultie to reſiſt poiſon, and ſtrengthen the whole bodie by their benign and vital vapor, although their ſubſtance go no further then the ſtomach. Thus pills when they are ſwallowed, though they go no further then the ſtomach, yet do they draw matter out of the joints and head; and ſtrong glyſters, though they paſs no further then the guts, yet by their qualitie diffuſed further with the vapor, they draw from the moſt diſtant parts; yet you muſt give an Antidote, not onely more powerfull then the poiſon in qualitie, but alſo greater in quantitie, that ſo it may the more eaſily overcom and exſpell the poiſon. Wherefore you muſt give it twice in a daie,

Treacle outwardly applied and inwardly taken good againſt venemous bites.

The force of *Echium*.

The efficacie of Cauteries againſt venemous bites.

The force of *Precipitate* againſt venemous wounds.

When hot things are not convenient for poiſoned wounds.

Antidotes muſt bee given in great quantities.

and continue it ſo long untill you ſhall know that the ſtrength of the poiſon is weakned and overcom by the remiſſion and decay of the malign ſymptoms. Yet in the mean while, you muſt not neglect the diſtemper cauſſed in the part by the poiſon, but muſt rather correct it by the application of the remedies contrarie to the diſtemper, as by cold things, if great heat afflict the affected part and whole bodie; by hot things on the contrarie, if it ſeem as cold as a ſtone, which oft-times happen's. And let thus much ſuffice for the general cure of poiſons: now will wee com to their particular cure.

## CHAP. XI.

*Why dogs ſooner becom mad then other creatures, and what bee the ſigns thereof.*

Dogs naturally ſubject to madneſs.

DOgs becom mad ſooner then other creatures, becauſ naturally they injoy that temper and condition of humors which hath an eaſie inclination to that kinde of diſeaſ, and as it were a certain diſpoſition, becauſ they feed upon carrion and corrupt, putrid and ſtinking things, and lap water of the like condition; beſides the trouble and vexation of loſing their maſters, make's them to run everie waie, painfully ſearching and ſmelling to everie thing, and neglecting their meat. A heating of the blood enſue's upon this pain, and by this heat it is turned into a melancholie, whence they becom mad. But yet dogs do not alwaies becom mad by means of heat, but alſo by occaſion of cold, that is, by contrarie cauſſes; for they fall into this diſeaſ not onely in the dog-daies, but alſo in the depth of winter. For dogs abound with melancholik humors, to wit cold and drie. But ſuch humors as in the ſummer through exceſs of heat, ſo in the depth of winter by conſtipation and the ſuppreſſion of fuliginous excrements, they eaſilie turn into melancholie. Hence follow's a verie burning and continual feaver, which cauſſeth or bringeth with it a madneſs. Add hereto, that in the depth of winter the heat which is contained within is redoubled, and in like manner as the ſcorching heat in ſummer, it breed's and turn's the humors into melancholie. Alſo dogs becom mad by contagion, as ſuch as are bitten by another mad dog. A mad dog hath ſparkling and fierie eies, with a fixed look, cruel and a ſquint, hee carrie's his head heavily, hanging down towards the ground, and ſomwhat on one ſide, hee gape's, and thruſt's forth his tongue, which is livid and blackiſh; and beeing ſhort breathed, caſt's forth much filth at his noſe, and much foaming matter at his mouth; in his gate, as if hee ſuſpected and feared all things, hee keepeth no one or certain path, but run's one while to this ſide, another while to that, and ſtumbling like one that is drunk, hee oft-times falleth down on the ground; hee violently aſſail's whatſoever hee meet's withall, whether it bee man, tree, wall, dog, or any thing elſ; other dogs ſhun him, and preſently ſent him a far off. But if another unawars chance to fall foul on him, hee yeeld's himſelf to his mercy, fawn's upon him, and privily labor's to get from him, though hee bee the ſtronger and greater. Hee is unmindful of eating and drinking, hee bark's not, yet hee bite's all hee meet's without anie difference, not ſpareing his maſter, as who at this time hee know's not from a ſtranger or enemie. For it is the propertie of melancholie to diſturb the underſtanding, ſo that ſuch perſons as are melancholick, do not onely rage againſt, and uſe violence to their friends and parents, but alſo upon themſelvs. But when as hee ſee's water, hee tremble's and ſhake's, and his haires ſtand up on end.

Dogs becom mad, not onely in the heat of ſummer, but alſo in the depth of winter.

Why melancholick perſons hurt themſelvs.

## CHAP. XII.

*By what ſignes wee may know a man is bitten by a mad dog.*

The bite of a mad dog not verie painful at the firſt.

IT is not ſo eaſie at the firſt to know a man that is bitten with a mad dog; and principally for this reaſon, becauſ the wound made by his teeth cauſſeth no more pain then other wounds uſually do; contrarie to the wounds made by the ſting or bite of other poiſonous creatures, as thoſe which preſently after they are inflicted, cauſ ſharp pain, great heat, ſwelling and abundance of other malign accidents, according to the nature of the poiſon; but the malignitie of the bite of a mad dog appear's not before that the venom ſhall invade the noble parts. Yet when you are ſuſpicious of ſuch a wound, you may acquire a certain knowledg and experience thereof by putting a piece of bread into the quitture that come's from the wound. For if a hungrie dog neglect, yea more flie from it, and dare not ſo much as ſmell thereto, it is thought to bee a certain ſign that the wound was inflicted by a mad dog. Others add, That if anie give this piece of bread to hens, that they will die the ſame daie they have eaten it; yet this later, I makeing experiment thereof, failed, for devouring this virulent bread, they became not a jot the worſ. Wherefore I think the former ſign to bee the more certain, for dogs have a wonderful and ſure ſmelling facultie, whereby they ſent and perceiv the malignitie of the like creature. But when as the rageing virulencie

Signs of the bite of a mad dog.

virulencie hath invaded the noble parts, then the patients, becomming ſilent and ſorrowful, think of manie things, and at the beginning make a noiſe with their teeth; they make no anſwer to the purpoſe, they are more teſtie then ordinarie, and in their ſleeps they are troubled with dreams, and ſtrange phantaſies, and fearful viſions: and laſtly, they becom affraid of the water. But after that the poiſon hath fixed it ſelf into the ſubſtance of the noble parts, then all their faculties are diſturbed, all the light of their memorie, ſenſes, reaſon and judgment is extinguiſhed. Wherefore becomming ſtark mad, they know not ſuch as ſtand by them, nor their friends, no nor themſelvs, falling upon ſuch as they meet withall and themſelvs with their teeth, and nails, and feet. Often twitchings like convulſions do ſuddenly riſe in their limbs; I judg them occaſioned by extraordinarie drineſs, which hath as it were wholly drunk up all the humiditie of the nervous parts; there is a great drineſs of the mouth with intolerable thirſt, yet without anie deſire of drink, becauſ the minde beeing troubled, they becom unmindful and negligent of ſuch things as concern them, and are needful for them; the eies look fierie and red, and all the face is of the ſame color; they ſtill think of dogs, and ſeem to ſee them, yea and deſire to bark and bite juſt after the manner of dogs: I conjecture, that the virulent humor hath changed all the humors and the whole bodie into the like nature, ſo that they think themſelvs alſo dogs; whence their voice becom's hoarſ by much endeavouring to bark, haveing forgot all decencie, like impudent dogs, to the great horror of the beholders. For their voice grow's hoarſ by reaſon of the great drineſs of the *aſpera arteria*; they ſhun the light, as that which is enemie to melancholie, wherewith the whole ſubſtance of the brain is repleniſhed: on the contrarie, they deſire darkneſs, as that which is like and friendly to them. But they are affraid of the water (though good to mitigate their great diſtemper of heat and drineſs) and they flie from looking-glaſſes, becauſ they imagin they ſee dogs in them, whereof they are much affraid, by reaſon whereof they ſhun the water, and all polite and clear bodies which may ſupplie the uſe of a looking-glaſs; ſo that they throw themſelvs on the ground, as if they would hide themſelvs therein, leſt they ſhould bee bitten again: for they affirm, that hee which is bitten by a mad dog, alwaies hath a dog in his mind, and ſo remain's fixed in that ſad cogitation. Wherefore thinking that hee ſee's him in the water, hee tremble's for fear, and therefore ſhun's the water. Others write, that the bodie by madneſs becommeth wondrous drie, wherefore they hate the water, as that which is contrarie thereto, beeing abſolutely the moiſteſt element, and ſo they ſay that this is the reaſon of their fearing the water. *Ruffus* write's, that madneſs is a kinde of melancholie, and that fear is the proper ſymptom thereof, according to *Hippocrates*; wherefore this or that kinde of melancholie beget's a fear of theſe or theſe things, but chiefly of bright things, ſuch as looking-glaſſes and water, by reaſon that melancholick perſons ſeek darkneſs and ſolitarineſs; by reaſon of the black corruption of the humor wherewith they abound. They fall into cold ſweats, a fomie, ſtinking and greeniſh matter flow's from the ulcer, by reaſon of the heat of the antecedent cauſ and ulcerated part. The urine moſt commonly appear's watriſh, by reaſon that the ſtrainers, as it were, of the kidnies, are ſtraightned by the heat and drineſs of the venom. Yet ſomtimes alſo it appear's more thick and black, as when nature powerfully uſing the expulſive facultie, attempt's to drive forth by urine the melancholick humor, the ſeat of the venom. Alſo ſomtimes it is wholly ſuppreſt, beeing either incraſſated by hot drineſs, or elſ the minde beeing carried other-waies, and forgetful of its own dutie, until at length the patients, vexed by the crueltie of ſo manie ſymptoms, and overcom by the bitterneſs of pain, die frantick, by reaſon that medicines have not been ſpeedily and fitly applied. For few of thoſe who have uſed remedies in time, have periſhed of this diſeaſ.

Signs, by which you may gather that the noble parts are tainted.

Why men becomming mad bark like dogs.

Why they ſhun the light.

Why they are affraid of the water.

*Aphor. 25. ſec. 6.*

The bite of a mad dog taken in hand in time, is for the moſt part cureable.

## CHAP. XIII.

### *Prognoſticks.*

WEe cannot ſo eaſily ſhun the danger wee are incident to by mad dogs, as that of other beaſts, by reaſon hee is a domeſtick creature, and houſed under the ſame roof with us. The virulencie that reſide's in his foam or ſlaver is hot and drie, malign, venenate and contagious, ſo that it cauſſeth a diſtemper like to it ſelf, in the bodie whereto it ſhall applie it ſelf, and ſpread it ſelf over the whole bodie by the arteries; for it doth not onely hurt when as it is taken in by a bite or puncture, but even applied to the skin, unleſs it bee forthwith waſhed away with ſalt water or urine. Neither doth this venom hurt equally, or at all times alike, for it harm's more or leſs, according to the inclination of the air to heat or cold, the depth of the wound, the ſtrength of the patient's bodie, and the ill humors thereof, and their diſpoſition to putrefaction, the freedom and largeneſs of the paſſages. Now malign ſymptoms happen ſooner or later, as in ſom about the fortieth day, in others about ſix moneths, and in others a year after. There bee ſom who thereupon are troubled with the falling-ſickneſs, and at length grow mad: ſuch as fall into a fear of the water, never recover. Yet *Avicen* think's their caſe is not deſperate, if

The venom of a mad dog applied outwardly onely may cauſ madneſs.

Whether the *Hidrephebia* or fear of water bee incurable.

if as yet they can know their face in a glaſs; for hence you may gather, that all the animal faculties are not yet overthrown, but that they ſtand in need of ſtrong purgations, as wee ſhall ſhew hereafter. *Aëtius* tell's, that there was a certain Philoſopher, who taken with this diſeaſ, and a fear of water, when as hee deſcended with a great courage unto the bath, and in the water beholding the ſhape of the dog that bit him, hee made a ſtand, but aſhamed thereof, hee forthwith cried out, *Quid cani cum Balneo? i.e.* What hath a dog to do with a Bath? which words beeing uttered, hee threw himſelf forcibly into the Bath, and fearleſly drank of the water thereof, and ſo was freed from his diſeaſ together with his erroneous opinion. It is a deadlie ſign to tumble themſelvs on the ground, to have an hoarſ voice, for that is an argument that the weazon is becom rough by reaſon of too exceſſive drineſs. Finally, the principal parts beeing poſſeſſed, there is no recoverie or life to bee hoped for. Men may well fall mad, though they bee not bit by a mad dog. For as the humors are often inflamed of themſelvs, and cauſ a *Cancer* or Leproſie, ſo do they alſo madneſs in melancholick perſons. The bites of vipers and other venemous creatures cauſ not like ſymptoms to theſe that com by the biteing of a mad dog; becauſ they die before ſuch can com forth or ſhew themſelvs. Great wounds made by mad dogs are not equally ſo dangerous as little, for from the former, great plentie of venemous matter flow's out; but in the later, it is almoſt all kept in.

An hiſtorie.

## CHAP. XIV.

*What cure muſt bee uſed to ſuch as are bitten by a mad dog.*

An hiſtorie.

THis caſe alſo require's ſpeedie remedies; for ſuch things are in vain which com long after the hurt. The Lawyer *Baldus* experienced this to his great harm; for beeing by chance lightly bit in the lip by a little dog wherewith hee was delighted, not knowing that hee was mad, and neglecting the wound, by reaſon of the ſmalneſs thereof, after ſom four moneths ſpace, hee died mad, haveing then in vain aſſaied all manner of medicines. Wherefore obſerving theſe things both for evacuation, as alſo for alteration, which wee have formerly mentioned in the general cure of wounds inflicted by the bite or ſting of venemous creatures, and by all the means there ſpecified, wee muſt draw forth the venom; and if the wound bee large, then ſuffer it to bleed long and much, for ſo ſom part of the poiſon will bee exhauſted; if it bee not great, it ſhall bee enlarged by ſcarification, or an occult cauterie, neither ſhall it bee healed or cloſed up at the ſooneſt, till fourtie daies bee paſſed. Sorrel beaten and applied to the wound, and the decoction thereof taken inwardly, is verie effectual in this caſe, as *Aëtius* affirm's. To the ſame purpoſe you may with good ſucceſs make a lotion and friction with muſtard diſſolved in urine or vineger, leaving upon the wound a double cloth moiſtned in the ſame decoction: laſtly, all acrid, biteing, and verie attractive medicines are convenient in this caſe. Wherefore ſom applie rocket boiled and beaten with butter and ſalt; others take the flower of *Orobus*, and temper it with honie, ſalt and vineger, and applie it hot. Horſ-dung boiled in ſharp vineger, or brimſtone beaten to powder, and tempered with ones ſpittle, is good. Alſo black pitch melted with ſom ſalt, and a little *Euphorbium* mixed therewith, and ſo applied, is good. Som write, that the hairs of the dog, whoſe bite cauſſed the madneſs, applied by themſelvs, by their ſympathie or ſimilitude of ſubſtance draw the venom from within outwards; for ſo a Scorpion beaten and applied to the place whereas it ſtung, by drawing out the poiſon that it ſent in, reſtore's the patient to health, both theſe by often experience are affirmed to have certain event. Others chaw unground wheat, and lay it upon the wound, others roſte beans under hot embers, then husk them, and cleav them, and ſo applie them. Alſo the wound may bee wholſomly waſhed and fomented with a decoction of Docks, and then the herb beaten may bee applied thereto; alſo the patient may drink the decoction; and by this one remedie *Aëtius* affirm's that hee hath recovered divers; for thus it move's urine plentifully, which is thought much to conduce to the cure of this diſeaſ. There bee ſom who applie the leavs of betonie and nettles beaten with common ſalt; others make a medicine to the ſame purpoſe and after the ſame manner of an Onion, the leavs of rue and ſalt. Yet the reſt are exceeded by treacle diſſolved in *aqua vitæ* or ſtrong wine, and rubbed hard upon the part, ſo that the blood may follow, laying upon the wound when you have wiped it, cloths dipped in the ſame medicine, then preſently applie garlick or onions beaten with common ſalt and turpentine: by this onely remedie I free'd one of the daughters of *Madamoiſelle de Gron* from the ſymptoms of madneſs, & healed the wound, when as a mad dog had bit her grievouſly in the calf of the right leg. Alſo it is good preſently to eat garlick with bread, and then to drink after it a draught of good wine, for garlick by its ſpirituous heat will defend the noble parts from poiſon. There bee ſom who wiſh to eat the roſted liver of the dog that hurt them, or elſ the liver of a goat, of which remedies as yet I have had no experience. Others preſcribe a dram of the ſeeds of *Agnus caſtus* to bee drunk with wine and butter. Others the powder of river-crabs, burnt and drunk in wine. Or, ℞. *rad. gent.* ʒii. *aſtacorum fluviat. in fumo combuſt. & in pollinem redact.* ʒiii. *terræ ſigil.* ʒß. *miſce.* Give ʒi. of

The force of Sorrel.

The force of Docks.

An hiſtorie.

this

this ſame powder in the decoction of river-crabs, and let them drink thereof oft at ſundrie times. Manie have caſt themſelvs into the ſea, neither have they thence had anie help againſt madneſs, as *Ferrand Pozet* the Cardinal teſtifieth in his book of poiſons; wherefore you muſt not relie upon upon that remedie, but rather you muſt have recourſ to ſuch things as are ſet in the books of Phyſicians, and approved by certain and manifold experience. But ſeeing that no poiſon can kill, unleſs it bee taken or admitted into the bodie, wee muſt not fear anie harm by ſprinkling our bodies with the *ſanies* of a mad dog, viper, toad, or anie other ſuch like venemous creature, if ſo bee that it bee preſently wiped or waſhed clean away.

Leaping into the ſea no certain remedie againſt madneſs.

## CHAP. XV.

*What cure muſt bee uſed to ſuch as fear the water, but yet are able to know themſelvs in a glaſs.*

SUch as have not their animal facultie as yet o'recom by the malignitie of the rageing venom, muſt have ſtrong purgations given them. Wherefore, if in anie caſe Antimonie bee uſeful, then is it in this, as that which cauſeth ſweats, looſeth the bellie, and procure's vomiting. For it is a part of extreme and dangerous madneſs to hope to overcom the cruel malignitie of this poiſon alreadie admitted into the bowels, by gentle purgeing medicines. Aſſuredly, ſuch and ſo great danger is never overcom without danger. Bathes alſo conduce, which may diſperſ and draw forth the poiſon by cauſſing ſweats. Alſo manie and frequent treacle-potions are good to retund the venom, and ſtrengthen the bowels; alſo it will bee fitting to give them water and all other liquid things, which they ſo much abhor, in a cup with a cover. Alwaies let ſuch as are poiſoned, or bitten, or ſtung by a mad dog or other venemous beaſt, keep themſelvs in ſom warm and light place, that the poiſon which by coldneſs is forced in, may bee the readilyer drawn out by the means of heat, and the ſpirits bee recreated by the brightneſs of the air, and therefore moov from the center to the circumference of the bodie, and let the room bee perfumed with ſweet things. To eat verie hot and ſalt things preſently at the beginning, as onions, leeks, all ſpiced meats, and ſtrong wine not allaied, ſeem' not to bee beſides reaſon; becauſ ſuch things by their ſpirituous heat hinder the diffuſion of the poiſon over the bodie, and ſtrengthen the filled entrails. There bee ſom alſo that would have them to feed upon groſs and viſcous meats, which by obſtructing the veſſels, may hinder the paſſage of the poiſon to the heart and other parts; and by the ſame reaſon it will bee better to fill themſelvs wth meat to ſatietie then otherwiſe; becauſ the malignitie of humors is encreaſed by hunger, then which nothing can bee more harmful to venemous wounds. Yet within a ſhort while after, as within five or ſix daies, they muſt return to a mediocritie, and uſe all things temperate, boiled meats rather then roſted, and that in a decoction of opening things, ſo to moov urine. Laſtly, they muſt keep ſuch a diet as melancholick perſons ought to do; neither ſhall they let blood, leſt ſo the poiſon ſhould bee further drawn into the veins; but it is good that the patient's bodie bee ſoluble from the verie firſt. Let their drink bee wine indifferently allaied with water, *oxymel ſimplex*, or the ſyrup of the juice of Citron with boiled water; or elſ this following Julip. ℞. *ſucci limonum, & malorum citri, an* ℥ß. *ſuc. gran. acid.* ℥ii. *aquæ acetoſæ, min. & roſ. an.* ℥i. *aq. font. coct. quantum ſufficit, fiat Julep, ut artis eſt.* Sleep is to bee avoided until the force of the poiſon is abated; for by ſleep the humors flow back into the bowels. All things that reſiſt poiſon muſt bee given anie waie whatſoever, as lemons, oranges, *angelica*-roots, gentian, tormentil, burnet, vervin, *carduus benedictus*, borage, bugloſs, and the like. Let all things that are afterwards ſet before the patient bee meats of good juice, ſuch as are veal, kid, mutton, partridg, pullets, capons, and the like.

The force of Antimonie againſt madneſs.

Why ſleep is hurtful to ſuch as are bitten by a mad dog, and all ſuch as are poiſoned.

## CHAP. XVI.

*Of the biteing of a Viper or Adder, and the ſymptoms and cure thereof.*

THe remedies that were formerly mentioned againſt the biteings of mad dogs, the ſame may bee uſed againſt all venemous bites and ſting, yet nevertheleſs each poiſon hath his pecular antidote. Vipers or Adders (as wee vulgarly term them) have in their gums, or the ſpaces between their teeth, little bladders filled with a virulent *ſanies*, which is preſſed out into the part that they bite with their teeth. There forthwith ariſeth a pricking pain, the part at the firſt is much ſwollen, and then the whole bodie, unleſs it bee hindred: groſs and bloodie filth ſweat's out of the wound, little bliſters riſe round about it, as if it were burn't, the wound gnaw's, and as it were feed's upon the fleſh, great inflammation poſſeſſeth the liver and the gums, and the whole bodie becom's verie drie, becomming of a pale or yelloweiſh color, with thirſt unquenchable; the bellie is griped by fits, a cholerick vomiting moleſteth them, the ſtomach is troubled with a hicketting, the patients are taken with often ſwoundings, with cold ſweat, the fore-runner of death, unleſs you provide by fit medicines for the noble parts, before the

The bites of vipers how virulent.

The ſymptoms

the poiſon ſhall invade them. *Matthiolus* tell's that hee ſaw a countrie-man, who, as hee was mowing a meadow, by chance cut an Adder in two with his ſithe, which when hee thought it was dead, hee took the one half whereon the head remained, without anie fear in his hand, but the enraged creature, turning about her head, cruelly bit him by one of his fingers, which finger, as men uſually do (eſpecially when as they think of no ſuch thing) hee put into his mouth, and ſucked out the blood and poiſon, and preſently fell down dead.

An hiſtoric.

An hiſtoric. When as *Charls* the ninth was at *Montpelier*, I went into the ſhop of one *Farges* an Apothecarie, who then made a ſolemn diſpenſation of Treacle, where not ſatisfying my ſelf with the looking upon the vipers which were there in a glaſs, readie for the compoſition, I thought to take one of them in my hands, but whil'ſt that I too curiouſly and ſecurely handled her teeth which were in her upper jaw, covered with a skin, as it were a caſe to keep the poiſon in, the beaſt catched hold of the verie end of my fore-finger, and bit mee in the ſpace which is between the nail and the fleſh; whence preſently there aroſe great pain, both by reaſon of the part endued with moſt exquiſite ſenſe, as alſo by the malignitie of the poiſon: forthwith I exceeding ſtraitly bound my finger above the wound, that ſo I might preſs forth the blood and poiſon, leſt they ſhould diffuſe themſelvs further over the bodie. I diſſolved old treacle in *aqua vitæ*, wherein I dipped and moiſtned cotton, and ſo put it to the wound, and within a few daies I throwly recovered by this onely medicine. You may uſe in ſtead of Treacle, Methridate and ſundrie other things, which by reaſon of their heat are powerful drawers, as a quill roſted in hot embers, garlick and leeks beaten and applied, barlie flowr tempered with vineger, honie, and goats-dung, and ſo applied like a pultis. Som think it ſufficient forthwith to waſh and foment the wound with vineger, ſalt, and a little honie. *Galen* write's that the poiſon inflicted by the bite of a viper, may bee drawn forth by applying to the wound the head of a viper, but otherſom applie the whole viper beaten to maſh.

Remedies for the bite of a viper.

*Lib. de theriac.*

## CHAP. XVII.

### *Of the Serpent called* Hæmorrhous.

The *Hæmorrhous* why ſo called.

THe Serpent *Hæmorrhous* is ſo called, becauſ by biteing hee cauſeth blood to drop out of all the paſſages of the wounded bodie; hee is of a ſmall bodie, of the bigneſs of a viper, with eies burning with a certain fierie brightneſs, and a moſt beautiful skin. The back of him (as *Avicen* write's) is ſpotted with manie black ſpots, his neck little, and his tail verie ſmall: the part which hee bite's forthwith grow's blackiſh, by reaſon of the extinction of of the native heat, which is extinguiſhed by ſuch poiſon whith is contrarie thereto in its whole ſubſtance. Then follow's a pain of the ſtomach and heart, theſe parts beeing touched with the peſtiferous qualitie of the poiſon. Theſe pains are ſeconded by vomiting, the orifice of the ventricle beeing relaxed by a *Diarrhæa*, the retentive facultie of all the parts of the bellie beeing weakned, and the veins which are ſpred through the guts, not beeing able to retain the blood contained in them. For the blood is ſeen to flow out, as in ſtreams, from the noſe, mouth, ears, fundament, privities, corners of the eies, roots of the nail, and gums, which putrefie, the teeth falling out of them. Moreover there happen's a difficultie of breathing, and ſtoppage of the urine, with a deadlie convulſion.

Wonderfull bleedings.

The cure is forthwith to ſcarifie, and burn the bitten part, or elſ to cut it quite off, if that it may bee don without danger of life, and then to uſe powerfullie drawing Antidotes.

## CHAP. XVIII.

### *Of the Serpent called* Seps.

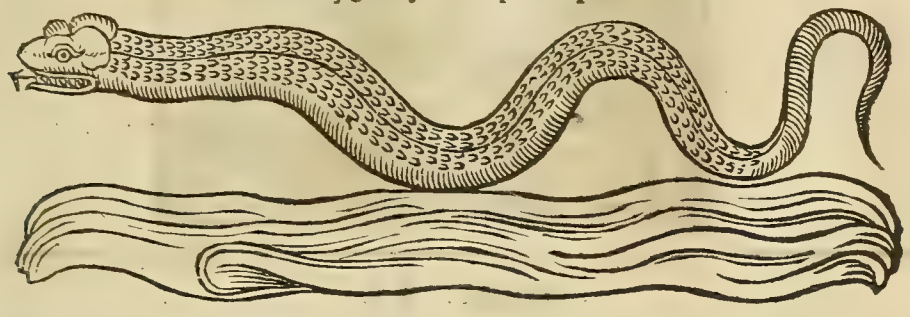
The reaſon of the name, and deſcription of the *Seps*.

THe Serpent *Seps* is ſo called, becauſ it cauſeth the part which it bite's, forthwith to putrefie, by reaſon of the cruel malignitie of its poiſon. It is not much unlike the *Hæmorrhous*, but that it curl's or twine's up the tail in divers circles. *Pauſanias* write's that this ſerpent is of an aſh-colour, a broad head, ſmall neck, big bellie, writhen tail, and as hee goe's, hee run's aſide like a crab. But his skin is variegated and ſpotted with ſeveral colors, like to Tapiſtrie. By the crueltie of his cauſtick

and

and putrefying venom, hee burn's the part which hee hath bit, with most bitter pain; hee causeth the shedding of the hairs, and as *Aëtius* addeth, the wound at the first casteth forth manifest blood, but within a little while after, stinking filth. The putrefied affected parts wax white, and the bodie all over becom's of the color of that scurf, which is termed *Alphos*, so that by the wickedness of this putrefactive poison, not onely the spirits are resolved, but also the whole bodie consumed, as by fire, a pestilent carbuncle, and other putrid tumors, arising from a hot and humid or suffocateing constitution of the air. Now for the remedies, they must bee such as are formerly prescribed against the biteings of a viper. The symptoms.

*The figure of the Serpent* Seps.



## CHAP. XIX.

### *Of the Basilisk or Cockatrice.*

THe Basilisk far exceed's all kindes of Serpents in the curstness of its poison. Therefore it is affirmed by *Nicander*, that into what place soever hee com's, other venemous creatures do forthwith flie thence, for that none of them can so much as endure his hissing; for hee is thought to kill all things even with this, and not with his biteing and touch onely; besides, if anie of them hasten to get anie meat or drink, and perceiv that the Basilisk is not far from from thence, he flie's back, and neglect's the getting of nourishment necessarie for life. *Galen* write's, that the Basilisk is a yellowish serpent, with a sharp head, and three riseings distinguished with white spots, and riseing up in form of a crown, by reason whereof hee is stiled the King of Serpents. Certainly the violence of his poison in killing men is so great, that hee is therefore thought to kill men, and other creatures by his sight onely. *Solinus* affirm's, that the bodie of a dead Basilisk hath wondrous faculties. Wherefore the inhabitants of *Pergamum*, in antient times, gave a mightie price for one, to hang upon the joists of the temple of *Apollo*, so to drive away the Spiders and Birds, lest they should there weav their webs, or the other build their nests in that sacred place. Verily no ravenous creature will touch their carkass; but if constrained by hunger they do touch it, then they forthwith fall down dead in the same place: and this happen's not onely by eating their bodie, but also by devouring of the bodies of such beasts as are killed by their biteings. They kill the trees and shrubs by which they pass, not onely by their touch, but even with their breath. Among the western Æthiopians is the fountain *Nigris*, near which there is a serpent called *Catablepas*, small in bodie, and slow, haveing a great head; wch it scarce can carrie, but that it lie's alwaies upon the ground, otherwise it would kill abundance of people, for it forthwith kil's all that see's the eies thereof, the Basilisk hath the same force; hee is bred in the province of *Cyrene*, of the length, of som twelv fingers, with a white spot in his head, resembling a crown; hee chaseth away all serpents with his hiss: Weasels are the destruction of such monsters: thus it pleased nature, that nothing should bee without its equal; they assail them in their dens, beeing easily known by the barrenness or consumption of the soil. These kill them also by their sent, and they die, and the fight of nature is ended: thus nature to the magnanimous Lion, lest there should bee nothing which hee might fear, hath opposed the weak creature the Cock, by whose crowing onely hee is terrified and put to flight. *Erasistratus* write's, that a golden yellowness affect's the bitten part of such as are hurt by a Basilisk, but a blackness and tumor possesseth the rest of the bodie, all the flesh of the muscles within a while after falling away peece-meal. An antidote against this must bee made of a dram of *Castoreum*, dissolved in wine and drunken, or in the juice of poppie. But *Aëtius* think's it superfluous to write remedies against the Basilisk, when as the sight and hearing onely kill's such as either see or hear her.

The efficacie of the poison of the Basilisk.

*Lib. de theriac.*

Why the Basilisk is thought to kill by his onely sight.

*Plin. lib. 8. cap. 21.*

The *Catablepas*.

Nothing in nature without its equal.

Symptoms.

Cure.

*The figure of a Baſiliſk.*

## CHAP. XX.

### *Of the Salamander.*

The malignitie of a Salamander.

THe Salamander kill's not onely ſuch as it bite's, by makeing a venemous impreſſion, but it alſo infect's the fruits and herbs over which it creep's, with a ſpittle or groſs moiſture which ſweat's out of all the bodie, to the great danger of the health and life of ſuch as eat theſe things at unawares: wherefore it need not ſeem ſtrange, which is received by ſom late writers, that ſom families have all died by drinking water out of the pits, whereinto a Salamander by accident was fallen. For if it ſhall creep upon a tree, it infect's all the fruit with the qualities of cold and moiſt poiſon, wherein it yield's not to Aconite.

The temper of her.

*Aëtius* write's, that ſuch as are infected with the poiſon of a Salamander, certain parts of their bodie grow livid, ſo that they fall away often, beeing putrefied. At the firſt there appear white ſpots over the bodie, then red, afterwards black with putrefaction, and the falling away of the hairs. The cure is, to procure vomit, to looſe the bellie with a glyſter, and to give them Treacle and Mithridate in potions. *Avicen* preſcribe's the ſame things againſt this kinde of poiſon as againſt *opium*, by reaſon of the cold nature of them both; the proper antidote is turpentine, *ſtyrax*, nettle-ſeeds, and cypreſs-leavs. *Dioſcorides* write's, that the Salamander is a kinde of Lizard, dull, variegated, and which is falſly reputed not to bee burnt by fire. But *Plinie* ſaith ſhee is ſo cold, that ſhee extinguiſheth the fire by her touch onely, beeing laied upon hot coals. On the contrarie, *Matthiolus* ſaith, that caſt into a great flame, they are quickly conſumed. It is eaſie out of *Aëtius* to reconcile theſe diſagreeing opinions. This creature, ſaith hee, paſſeth through a burning flame, and is not hurt, the flame divideing it ſelf, and giveing her way, but if ſhee continue anie time in the fire, the cold humor beeing conſumed in her, ſhee is burnt. Now the Salamander is black, variegated, with yellow ſpots, ſtar-faſhion.

Symptoms.

The cure.

*Lib. 2. cap. 54.*

How a Salamander may bee ſaid to live in the fire.

*The figure of a Salamander.*

## CHAP. XXI.

### *Of the* Torpedo.

THe *Torpedo* hath his name from the effect, by reaſon that by his touch and power the members becom torpid and numb; in muddie ſhoars it live's upon fiſh, which ſhee catcheth by craft. For lying in the mud, ſhee ſo ſtupefie's thoſe that are nigh her, that ſhee eaſily prey's upon them; ſhee hath the ſame power over men, for ſhee ſend's a numneſs not onely into the arm of the fiſher-man, but alſo over all his bodie, although his fiſhers pole bee between them.

The craft of the *Torpedo*.

His ſtupefying force.

*The*

*The effigies of a* Torpedo.

## CHAP. XXII.

### *Of the Biteings of Aſps.*

THe wound which is made by an Aſp is verie ſmall, as if a needle were thruſt into the part, and without anie ſwelling. Theſe ſymptoms follow upon her bite, ſudden darkneſs cloud's their eies, much agitation in all their bodies, but gentle notwithſtanding; a moderate pain of the ſtomach trouble's them, their fore-heads are continually troubled with convulſive twitchings, their cheeks tremble, and their eie-lids fall gently to reſt and ſleep; the blood which flow's from the wound is little, but black; death no longer deferred then the third part of a daie, will take them away by convulſions, unleſs you make reſiſtence with fitting remedies. The male-Aſp make's two wounds, the female four, as it alſo happen's in the biteings of vipers. Now for that that the poiſon of Aſps congeal's the blood in the veins and arteries, therefore you muſt uſe againſt it ſuch things as are hot and ſubtil of parts, as mithridate or treacle diſſolved in *aqua vitæ*, and the ſame powred into the wound; the patient muſt bee warmed by baths, frictions, walking, and the like. When as the hurt part becommeth purple, black or green, it is a ſign that the native heat is extinct and ſuffocated by the malignitie of the venom. Therefore then it is beſt to amputate the member, if the partie bee able to endure it, and there bee nothing which may hinder. *Vigo* write's, that hee ſaw a Mountebank at Florence, who, that hee might ſell the more of his Antidotes, and at the better rate, let an Aſp to bite him by the finger, but hee died thereof ſom four hours after. To the ſame purpoſe you may read *Matthiolus*, whereas hee write's that thoſe Impoſtors or Mountebanks to cozen the better, and deceiv the people, uſe to hunt and take vipers and aſps long after the ſpring, that is, then whenas they have caſt forth their moſt deadlie poiſon; then they feed them wᵗʰ meats formerly unuſual to them, ſo that by long keeping and care, at the length they bring it to paſs, that they put off a great of their venemous nature; neither beeing thus ſatisfied, they make them oftentimes to bite upon peeces of fleſh, that ſo they may caſt forth into them the venom which is contained in the membrane between their teeth and gums. Laſtly, they force them to bite, lick and ſwallow down an aſtringent medicine, which they compoſe and carrie about for the ſame purpoſe, that ſo they may obſtruct the paſſages by wᶜʰ the venom uſed to flow out, for thus as length their bites will bee harmleſs, or without great danger. This therefore is their art, that ſo they may ſell their counterfeit treacle to the people at a high rate, as that which is a moſt ſafe remedie againſt all poiſonous bites. *Chriſtopher Andrew* in his book called *Oicoiatria*, write's that the Iſlands of Spain are everie where full and ſtor'd with ſerpents, aſps, and all ſorts of venemous beaſts, againſt whoſe bites they never obſerved or found anie benefit in treacle. But the efficacie of the following Antidote is ſo certain and excellent, and approoved by ſo manifold experience, that in the confidence thereof, they will not bee affraid to let themſelvs bee bitten by an Aſp. Now this medicine is compoſed of the leavs of Mullet, Avenes and red-ſtock-gilliflowrs in like quantitie, which they boil in ſharp vineger and the urine of a ſound man, and therewith foment the wounded part. Yet if hee have not taken nor uſed anie thing of a good while after the wound, it will bee better and more certian, if the patient drink three ounces of this decoction faſting two hours before meat.

Symptoms.

Cureing.

An hiſtorie.

By what means Aſps may hee made leſs hurtful. *Gal. lib. de Ther. ad piſonem.*

Againſt the bites of what ſerpents treacle doth no good.

A certain remedie againſt the biteing of Aſps.

## CHAP. XXIII.

### *Of the biteing of a Snake.*

I Have thought good in a true hiſtorie to deliver the virulent malignitie of the bite of a Snake, & the remedies thereof. When as King *Charls* the ninth was at Moulins, *Monnſieur Le Feure*,

An hiſtorie.

*Feure* the King's Phyſician,& I were called to cure the Cook of the Ladie of Caſtelpers. Who gathering hops in a hedg to make a ſallet, was bit on the hand by a ſnake that there lay hid, hee putting his hand to his mouth, ſucked the wound to eaſ the pain by ſucking forth the venom. But his tongue forthwith ſwelled ſo big, that hee could not ſpeak his minde: beſides, his whole arm, even to his ſhoulder, was in like ſort much ſwelled, his pain was ſo vehement, that it made him ſwoun twice in my preſence, his face was wan and livid like to a dead bodie; and though I deſpaired of his recoverie, yet not ſuffering him to bee quite forſaken, I waſhed his mouth with treacle diſſolved in white wine, and gave him ſom thereof to drink, adding thereto ſom *aqua vitæ*. I opened his ſwoln arm with manie and deep ſcarifications, eſpecially in the place where hee was hurt, I ſuffered the blood which was wholly ſerous and ſanious,, to flow more plentifully, I waſhed the wovnds with treacle and mithridate diſſolved in *aqua vitæ*, and then I put him exceeding warm in bed, procureing ſweat, and makeing him to lie awake, leſt ſleep ſhould draw the poiſon inwards to the entrails. I by theſe means ſo far prevailed, that on the day after hee was free'd from all his malign ſymptoms. Therefore I judged, it onely remained for a perfect cure, that the wound ſhould bee long kept open and waſhed with treacle; neither was I deceived, for within a few daies hee was perfectly recovered.

The cure.

## CHAP. XXIV.

### *Of the biteings of Toads.*

The bites of Toads how harmful.

THough Toads want teeth, yet with their hard and rough gums they ſo ſtraitly preſs or pinch the part which they ſhall take hold on, that they will force their poiſon thereinto, and ſo over the whole bodie by the pores of the preſſed part. Moreover they caſt forth their venom by urine, ſpittle and vomit upon herbs, but chiefly upon Strawberries, the which they are reported greatly to affect. Hence manie ſuddenly and ignorantly catch their deaths.

An hiſtorie.

I heard from a man of verie good credit, that there were two merchants not far from the Citie *Tholous*, who whileſt dinner was provideing, walked into the Garden that belonged to the Inn, where they gathered ſom ſage leavs, and unwaſhed as they were put them into their wine. They had not as yet dined, when beeing taken with a ſudden *Vertigo*, the whole Inn ſeemed to run round, then loſing their ſight, they fell into a ſwound, intermixed now and then with convulſions. But they ſtammered with their lips and tongues becomming black; a froward and horrid look, with continual vomiting, and a cold ſweat, the fore-runner of death, which preſently ſeazed upon them, their bodies becomming exceedingly much ſwoln. But the Juſtices of the place ſuſpecting that they were poiſoned, made the Inn-keeper and the Gueſts to bee apprehended, beeeing examined they all conſtantly and with one voice anſwered, That the dead parties ate of the ſame meat and drink which the reſt did, but onely that they put ſage into their wine. A Phyſician was asked the queſtion whether ſage might bee poiſoned; hee anſwered, it might: but to com to the purpoſe, it muſt appear whether anie venemous creature hath poiſoned the plant with her ſpittle or venemous *ſanies*. This which was lightly pronouuced, and onely by conjecture, was by the eie found to bee true. For at the root thereof there was found a hole in the ground full of Toads, who got out by putting in of warm water, made it credible that the plant was poiſoned by their ſpittle and urine, whereby you may underſtand how unwiſely they do, who devour herbs and fruits newly gathered without waſhing. Alſo wee muſt take heed leſt falling aſleep in the fields, wee lie not near the holes which toads or other venemous beaſts of the ſame nature have made their habitation. For thence a venemous or deadlie air may bee drawn into the lungs. For the ſame cauſ wee muſt abſtain from eating of frogs in the month of May, becauſ then they engender with toads. Oxen in feeding ſomtimes lick up ſmall toads together with the graſs, which preſently will breed their great harm, for thereupon the oxen ſwell ſo big, that they often burſt withall. Neither is the venom of toads deadly onely beeing taken inwardly, but even ſprinkled upon the skin, unleſs they forthwith wipe the place, and waſh it with urine, water and ſalt. Such as are poiſoned by a toad turn yellow, ſwell over all their bodies, are taken with an Aſthmatick difficultie of breathing, a *Vertigo*, convulſion, ſwounding, and laſtly by death it ſelf. Theſe ſo horrid ſymptoms are judged inherent in the poiſon of toads, not onely by reaſon of the elementarie qualities thereof, coldneſs and moiſture, which are chiefly predominant therein; but much rather by the occult propertie which is apt to putrefie the humors of that bodie whereto it ſhall happen. Therefore it will bee convenient to procure vomit, eſpecially if the poiſon bee taken by the mouth, to give gliſters, and to weaken the ſtrength of the poiſon by hot and attenuateing Antidotes, as treacle and methridate diſſolved in good wine; but in concluſion to digeſt it by bathes, ſtoves, and much and great exerciſe. *Rondeletius* in his book *de piſcibus*, affirm's the ſame things of the curſed venom of toads, as wee have formerly delivered: yet that they ſeldom bite, but that they caſt forth either their urine, the which they gather in a great quantitie in a large bladder, or

The ſymptoms occaſioned by the poiſon of Toads.

May-frogs.

The cure.

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elf their venemous ſpittle or breath againſt ſuch as they meet withall, or aſſail; beſides, the herbs which are tainted by their poiſonous breath, but much more ſuch as are ſprinkled with their ſpittle or urine, are ſufficient to kill ſuch as eat them. The Antidotes are juice of betonie, plantane, mug-wurt, as alſo the blood of Tortoiſes made with flower into pills, and forthwith diſſolved in wine, and drunken. *Plinie* write's, that the hearts and ſpleens of Toads reſiſt poiſon. The vulgar opinion is falſ, who think that the Toad-ſtone is found in their heads, which is good againſt poiſon.

Antidotes againſt the poiſon of Toads.

## CHAP. XXV.

### *Of the ſtinging of a Scorpion.*

A Scorpion is a ſmall creature with a round bodie in form of an egg, with manie feet, and a long tail conſiſting of manie joints, the laſt whereof is thicker, and a little longer then the reſt, at the verie end thereof is a ſting, in ſom two, hollow and replete with cold poiſon, the which by the ſting it caſt's into the obvious bodie; it hath five legs on each ſide forked with ſtrong claws, not unlike to a Crab or Lobſter, but the two foremoſt are bigger then the reſt; they are of a blackiſh or ſootie color, they go aſide, aſide; and oftimes faſten themſelvs with their mouths and feet ſo faſt to men, that they can ſcarce bee plucked there-hence. There bee ſom who have wings like the wings of Locuſts, waſteing the corn, and all green things with their biteing and burning. Such are unknown in France. Theſe flie divers countries, like winged Ants. This is likely to bee true by that which *Matthiolus* write's, that the husband-men in Caſtile in Spain, in digging the earth oftimes finde a ſwarm of Scorpions, which betake themſelvs thither againſt winter. *Plinie* write's, that Scorpions laid waſte a certain part of Æthiopia, by chaſeing away the inhabitants. The Antients made divers kindes of Scorpions, according to their varietie or difference of colors, ſom beeing yellow, others brown, reddiſh, aſh-colored, green, whitiſh, black, duskie; ſom have wings, and ſom are without. They are more or leſs deadlie, according to the countries they inhabit. In Tuſcanie and Scithia they are abſolutely deadlie, but at Trent, and in the Iland Pharos their ſtinging is harmleſs. The place ſtung by a Scorpion preſently begin's to bee inflamed, it waxeth red, grow's hard, and ſwell's, and the patient is again pained, hee is one while hot, another while cold, labor preſently wearie's him, and his pain is ſom-whiles more, and ſom-whiles leſs, hee ſweat's and ſhake's as if hee had an Ague, his hair ſtand's upright, paleneſs diſ-color's his members, and hee feel's a pain, as if hee were pricked with needles over all his skin, winde flieth out backwards, hee ſtrive's to vomit and go to ſtool, but doth nothing; hee is moleſted with a continual fever and ſwounding, which at length proov's deadlie, unleſs it bee remedied. *Dioſcorides* write's, that a Scorpion beaten and laid to the place where hee is ſtung, is a remedie thereto; as alſo eaten roſted to the ſame purpoſe. It is an uſuall, but certain remedie to annoint the ſtung place with the oil of Scorpions. There bee ſom who drop into the wound the milkie juice of figs; others applie calamint beaten, other-ſom uſe barlie-meal mixed with a decoction of *Rue*. Snails beaten together with their ſhells, and laid thereon, preſently aſſwage pain. *Sulphur vivum* mixed with Turpentine, and applied plaſter-wiſe, is good; as alſo the leavs of *Rue* beaten, and laid thereto. In like ſort alſo the herb *Scorpioides*, which thence took its name, is convenient, as alſo a bryonie-root boiled and mixed with a litile ſulphur and old oil. *Dioſcorides* affirm's, Agarick in powder, or taken in wine to bee an Antidote againſt poiſons, verily it is exceeding good againſt the ſtingings or biteings of ſerpents. Yet the continual uſe of a bath ſtand's in ſtead of all theſe, as alſo ſweat, and drinking wine ſomwhat allai'd. Now Scorpions may bee chaſed away by a fumigation of *Sulphur* and *Galbanum*; alſo oil of Scorpions dropped into their holes, hinder's their comming forth. Juice of raddiſh doth the ſame. For they will never touch one that is beſmeared with the juice of radiſh or garlick, yea verily, they will not dare to com near him.

Winged Scorpions.

Symptoms.

*Lib. 2. cap. 10. & lib. 6. ca. 44.*

*Lib. 3. cap. 1.*

Scorpions chaſed away with the juice of Garlick or Radiſh.

## CHAP. XXVI.

### *Of the ſtinging of Bees, Waſps, &c.*

BEes, Waſps, Hornets and ſuch like, cauſ great pain in the skin wounded by their ſtinging, by reaſon of the curſtneſs of the venom which they ſend into the bodie by the wound, yet are they ſeldom deadlie, but yet if they ſet upon a man by multitudes, they may com to kill him. For thus they have ſomtimes been the death of horſes. Wherefore becauſ ſuch as are ſtung by theſe, by reaſon of the crueltie of pain, may think they are wounded by a more virulent and deadlie creature, I think it not amiſs to ſet down what ſignes follow upon their ſtingings. Great pain preſently ariſeth, which continueth untill the ſting left in the part is taken forth, the part becom's red and ſwoln, and there riſeth a puſh or little bliſter. The cure is, forthwith to ſuck the wound

Symptoms.

The cure.

verie hard, and thereby to draw forth the ſtings, which if they cannot thus bee gotten out, the place, if nothing hinder, is to bee cut, or eli temper aſhes with leven or oil, and ſo applie them: the part alſo may bee verie conveniently put into hot water, and there fomented for an houres ſpace, and at length waſhed in ſea-water. Creſſes beaten and applied, aſſwage the pain and diſcuſs the humor cauſſing the tumor. Ox-dung macerated in oil and vineger, and applied hot, doth the ſame. There are ſom who applie to the part the ſame creatures beaten, as wee formerly ſaid of Scorpions; beans chawed and laid to the part aſſwage pain. Vineger, honie and ſalt applied exceeding hot, are good, if beſides, you dip a cloth therein, and lay it upon the place; *ſulphur vivum* tempered with ſpittle hath the ſame effect. The milkie juice of unripe figs incorporated with honie, is judged verie effectual, but it is much the better, mixed with treacle. Waſps will not ſting nor bite ſuch as annoint their bodies with the juice of mallows mixed with oil. They may bee quickly chaſed away with the fume of brimſtone and ſuch like things. A waſp is ſaid, if ſhee finde a viper dead, to dip her ſting in the others poiſon, and thence men learned to empoiſon the heads of their arrows. The rough and hairie worms, which are commonly called Bear-worms, eſpecially thoſe which breed about a Pine-tree, cauſ great itching, redneſs and ſwelling in the part which they bite, touch or grate upon verie hard. A remedie hereof is onions beaten with vineger, and the reſt of the things formerly mentioned.

The bites of Bear-worms.

## CHAP. XXVII.

### *Of the bite of a Spider.*

Differences of Spiders.

SPiders weav webs with various art, yet in theſe they alwaies make a lurking-hole, ſo to lie in wait to catch the intrapped flies, and ſo to prey upon them. There are manie ſorts of Spiders; one is termed *Rhagium*, round, and like a black-berrie, whence it taketh the name; it hath a verie ſmall mouth under the mid'ſt of the bellie, and moſt ſhort feet, as if they were imperfect, her bite is as painful as the ſting of a Scorpion. Another is called *Lupus*, or the Wolf-Spider, becauſ ſhee doth not onely lie in wait to catch Flies, but alſo Bees and Waſps, and all ſuch things as may flee into her web. The third is named *Myrmecion*, it is larger then an Ant, but headed like one, the bodie thereof is black, and hath white ſpots or ſtreaks running towards the back. The fourth kinde may bee called *Veſparium*, in other things reſembling a Waſp, but that it want's the wings; of a reddiſh color, and liveing onely on herbs. The Antients have thought their biteings to bee venemous. Now their poiſon is therefore thought to bee cold, becauſ the ſymptoms thence ariſeing are winde in the bellie, refrigerations of the extreme parts of the bodie, numneſs in the bitten part, with ſenſ of cold and ſhakeing. The wound muſt forthwith bee waſhed with verie hot vineger; then muſt you lay thereto Onions, and ſuch like things beaten, then procure ſweat by art, as by baths and ſtoves, yet nothing is more effectual then treacle and mithridate.

## CHAP. XXVIII.

### *Of* Cantharides *and* Bupreſtes.

The deſcription of *Cantharides*.

*Antharides* ſhine as it were with a golden color, acceptable to the eie, by reaſon of the commixture of a blewiſh or greeniſh color therewith, yet their ſmell is ungrateful. They are hot and drie in the fourth degree, and ſo cauſtick, corroſive and venemous, not onely by reaſon of their cauſtick qualitie, but becauſ of a ſecret antipathie which they naturally have againſt the urinarie parts; which effects they produce not onely if they bee taken by the mouth into the bodie, but even applied outwardly to raiſ bliſters. Such as have taken them inwardly, have the taſte of pitch, or ſom thing like *cedria*, or the roſin of Cedars in their mouths: it is likely that this taſte proceed's from the humors diſſolved by the putredinous heat in the ſtomach, guts & liver, and the vapors that there-hence ariſe; for taken inwardly, they gnaw, exulcerate and burn all parts from the mouth even to the bellie, whence enſueth a bloodie-flux, excrements flowing out, which reſemble the waſhings of new-killed fleſh. Then follow's a burning fever, *vertigo*, madneſs, reſtleſneſs, the brain beeing diſturbed by the plentie of vapors lifted up from the corroded and burnt parts and humors, which therefore when as they appear, you may know the affect is uncureable. In the parts appointed for the receiving and conveiance of the urine they cauſ a burning inflammation, excoriation, ſtrong and continual erection of the yard, whence enſue's a bloodie and painful ſtrangurie, in ſtead of which there oftimes happen's or ſucceed's an *Iſchurie*, or ſtoppage of the water, whence a gangrene and mortification of the part, and ſo in concluſion of the whole bodie beſides. When as *Cantharides* are taken inwardly, the remedie is vomiting, drinking of Cows-milk to correct the heat and drineſs, good alſo to mitigate the ulcers, and ſtay the *dyſenterie*; it is good alſo to inject it into the guts by glyſter.

Enemies to the Bladder. Symptoms.

In

In stead thereof sallet-oil, or oil of sweet almond's is convenient to retund the acrimonie of the poison fastned to the sides of the stomach. The rest and whole cure of this poison you may learn by the following historie. A certain whore, the better to enjoy the companie of a young Abbot who loved her, entertained him with a banquet, and sprinkled divers of their cates with the powder of *Cantharides*, to incite him the more to venerie. The next day, when as the Abbot cast forth pure blood at his fundament and yard which stood verie stiffe, hee called som Physicians, who presently by the fore-mentioned symptoms, which were all verie apparent in him, understood that hee had *Cantharides* given him: wherefore they purged him upwards with vomits, and downwards by glysters made with French-barlie, Rice, a decoction of mallowes, seeds of line and fenugreek, oil of lillies, goats-suet: then presently after they gave him a little treacle with a good quantitie of *conserv's* of violets, which might draw the poison outwards, they gave him milk to drink, and caused him to to use injections into the urinarie passage and guts made of refrigerateing things, as the juice of lettuce, purslaine, cucumbers, gourds, melons; of tough and viscid things, that so they might stick the more easily and longer to the ulcerated parts, as the mucilages of *psilium*, mallows, quince-seeds, syrup of water-lillies, poppies and violets, fresh butter, and oil of sweet almonds, and they made him drink onely barlie-water, or the common ptisan; they let him feed on veal, kid, and pork boiled with lettuce, purslaine, barly and violet leaves, the which by their humiditie might relax the bellie, and by their toughnes lenifie the roughnes of asperitie; they applied also refrigerateing things to the loines, share and *perinæum* to asswage the heat of the urine. At length they put him into a warm bath, and to conclude, they left nothing unattempted to draw forth or weaken the poison. But all their endeavors were in vain, for the Abbot died, not beeing destitute of remedies conveniently prescribed, but overcom by the contumacious malignitie of the poison. The Physicians pains had far better succes in a certain Gentlewoman against this kinde of affect; her whole face was deformed with red, fierie and filthie pustles, so that all shunned her companie as if shee had been troubled with a Leprosie, and were readie to forbid her the societie of men; shee came to *Paris*, and calling *Hollerius* and *Grealmus* Physicians, mee and *Caballus* beeing Surgeons, shee made a grievous complaint, and besought us earnestly for som remedie against so great a deformitie of her face; having diligently considered her case, wee pronounced her free from a Leprosie; but wee judged it fit to applie to her whole face a vesicatorie of *Cantharides*, three or four houres after the application whereof, the medicines beeing com to work its effect, her bladder began to burn exceedingly, and the neck of her womb to swell, with gripings, continual vomiting, making of water and scowring, a troublesom agitation of the bodie and members, a burning and absolutely fierie fever. I forthwith called the Physicians, it was decree'd that shee should drink wine plentifully, and that it should bee injected by the fundament into the guts, and by the urinarie passage into the bladder and the neck of the womb, and that shee should keep her self, untill the pain were mitigated, in a warm bath made of the decoction of Line-seeds, the roots and leaves of mallowes, marsh-mallowes, violets, henbane, purslain and lettuce; and her loines and genitals should bee anointed with *unguentum rosatum and populeon* stirred and incorporated with *oxycrate*. By these means, all the symptoms were mitigated. Her face in the *interim* rose all in a blister, and much purulent matter came out thereof, and so the deformitie, wherewith shee was formerly troubled, vanished away for ever, so that within a while after shee was married, and had manie children, and is yet living in perfect health.

A historie.

The cure.

A historie.

*Cantharides* applied to the head, ulcerate the bladder.

A remedie against Leprous pustles.

*Bupreστes* also are of the kinde of *Cantharides*, beeing like unto them in shape and facultie. If an Ox or sheep or anie other creature shall in feeding devour one of them, hee will presently swell up like a Tun; whence also they take their name: if a man take them inwardly, he shall endure the like symptoms as in takeing *Cantharides*, and over and besides both his stomach and his whole bellie shall bee wonderfully puffed up, as if hee had a Dropsie. It is probable that this inflation like a tympanie happeneth by humors diffused and resolved into vapors by the fierie acrimonie of the venom: They are to bee cured after the same manner as such as have drunk *Cantharides*, Lastly, as in all other poisons which are taken into the bodie, so also here, if the poison taken by the mouth bee thought as yet to bee in the stomach, you must then procure vomit. If it bee gotten into the guts, then must it bee drawn away by glysters; if diffused over all the bodie, then must you make use of such things as may drive the poison forth from the center to the circumference, such as are baths and stoves.

The reason of the name.

## CHAP. XXIX.

### *Of Horse-leeches.*

What horse-leeches most virulent.

HOrse-leeches are also venemous, especially such as live in muddie stinking ditches, for these are less hurtful which reside in clear and pure waters. Wherefore, before they are

to bee uſed in caſes of phyſick, they muſt bee kept for ſom daies ſpace in clean water, that ſo they may purge themſelvs; otherwiſe they may chance to leav ulcers hard to cure in the places whereto they ſhall bee applied, and the rather, if they bee violently plucked off, becauſ they by that means leav their teeth faſtned in the part. Now hee which by chance hath ſwallowed a Horſ-leech, muſt bee asked in what part hee feeleth her, that is, the ſenſ of her ſucking. For if ſhee ſtick in the top of the throat or gullet, or in the midd'ſt thereof, the part ſhall bee often waſhed with muſtard diſſolved in vineger. If ſhee bee near the orifice of the ventricle, it is fit that the patient by little and little ſwallow down oil with a little vineger. But if ſhee faſten to the ſtomach, or the bottom of the ventricle, the patient, by the plucking of the part, ſhall perceiv a certain ſenſ of ſucking, the patient will ſpit blood, and will for fear becom melancholick. To force her thence, hee ſhall drink warm water with oil; but if ſhee cannot ſo bee looſed, then ſhall you mix aloës therewith, or ſom thing endued with the like bitterneſs, for ſhee will by that means leav her hold, and ſo bee caſt forth by vomit. You may perceiv this by ſuch as are applied to the skin, on the external parts, for by the aſperſion of bitter things, whether they bee full or emptie, they will forſake their hold. Then ſhall the patient take aſtringent things, which may ſtop the blood flowing forth of the bitten part, ſuch is *Conſerv of Roſes*, with *terra ſigillata*, *Bole-Armenick*, and other more aſtringent things, if need ſo require. For if they ſhall adhere to ſom greater branch of ſom vein or arterie, it will bee more difficult to ſtop the flowing blood.

Divers remedies according to the diverſitie of the parts.

But for that not the earth onely, but the ſea alſo produceth venemous creatures, wee will in like ſort treat of them, as wee have alreadie don of the other, beginning with the Lampron.

## CHAP. XXX.

### *Of the Lampron.*

The deſcription of the Lampron.

THe Lampron, called in Latine *Muræna*, is a ſea-fiſh ſomthing in ſhape reſembling a Lamprie, but ſhee is bigger and thicker, and hath a larger mouth, with teeth long, ſharp and bending inwards, ſhee is of a duskie color, diſtinguiſhed with whitiſh ſpots, and ſom two cubits length; the Antients had them in great eſteem, becauſ they yield good nouriſhment, and may bee kept long alive, in pools or ponds, and ſo taken as the owners pleaſ to ſerv their table, as it is ſufficiently known by the hiſtorie of the Roman *Craſſus*. Shee by her biteing induceth the ſame ſymptoms as the viper, and it may bee helped by the ſame means. Verily the Lampron hath ſuch familiaritie with ehe Viper, that leaving her natural element the ſea, ſhee leapeth aſhoar, and ſeeketh out the Viper in her den to join with her in copulation, as it is written by *Ælian* and *Nicander*.

The natural friendſhip of the Lampron and Viper.

## CHAP. XXXI.

### *Of the* Draco-marinus, *or ſea-Dragon.*

THe ſea-Dragon, called by the French *Viva*, for his vivacitie (and by the Engliſh a *Viver*, or as ſom ſay, a *Qua-viver*) becauſ beeing taken in fiſhing, and drawn out of the ſea, ſhee is ſaid long to ſurvive. Her pricks are poiſonous, but chiefly thoſe that are at the edges of her gils. Which is the reaſon that Cooks cut off their heads before they ſerv them up to the table; and at Roven the fiſher-men lay them not upon their ſtalls to ſell before they have cut off their heads. The wounded part of ſuch as are hurt, pain's them much with inflammation, a fever, ſwounning, gangrene and deadlie mortification, unleſs it bee quickly withſtood. Not verie long ago the wife of *Monſieur Fromaget*, Secretarie of the requeſts, was wounded with a prick of this fiſh in her middle-finger, there followed a ſwelling and redneſs of the part, without much pain; but perceiving the ſwelling to encreaſ, beeing made more warie by the miſchance of her neighbor the wife of *Monſieur Bargelonne*, Lievtenant particular in the Chaſtelet of Paris, who died not long before by the like accident beeing neglected, ſent for mee; I underſtanding the cauſ of her diſeaſ, laid to her pained finger and her whole hand, beſides a pultis made of a great Onion roſted under the coles, leaven, and a little treacle. The next day I wiſhed her to dip her whole hand into warm water, ſo to draw forth the poiſon, then I divided the skin about it with much ſcarification, but onely ſuperficiarily; to the gaſhes I applied Leeches, which by ſucking drawing a ſufficient quantitie of blood, I put thereto treacle diſſolved in *aqua vitæ*. The next day the ſwelling was aſſwaged, and the pain eaſed, and within a few daies ſhee was perfectly well. *Dioſcorides* write's, that this fiſh divided in the mid'ſt, and applied to the wound, will cure it.

Symptoms.

An hiſtorie.

The cure.

CHAP.

## CHAP. XXXII.

*Of the* Paſtinaca marina, *or Sting-Ray, which ſom call the* Fierce-claw.

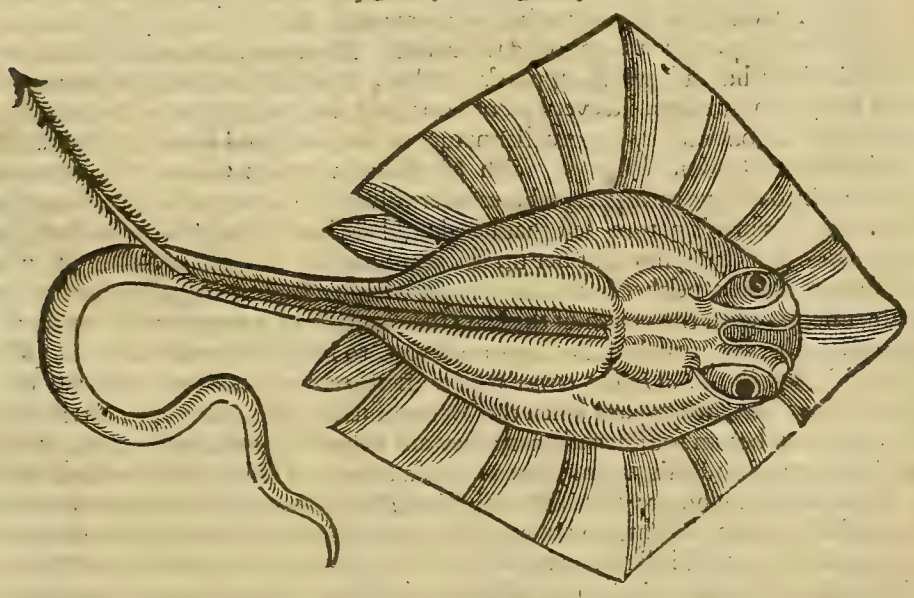
SUch as are ſtung by a Sting-Ray (as *Aëtius* hath written) the place of the wound doth manifeſtly appear; there enſue's thereon laſting pain and the numneſs of the whole bodie. And ſeeing that it hath a ſharp and firm ſting, whereby the nervs by the deepneſs of the ſtroke may bee wounded, it ſo happen's that ſom die forthwith, their whole bodies ſuffering convulſions. Moreover, it will kill even the verie trees into whoſe roots it is faſtned. Yet *Plinie* affirm's, that it is good againſt the pain of the teeth, if the gums bee ſcarified therewith, yea, and it beeing made into powder with white Hellebore, or of it ſelf, will cauſ teeth to fall out without anie pain, or anie violence offered to them. This fiſh is good meat, the head and tail excepted; ſom of them have two ſtings, other-ſom but one; theſe ſtings are ſharp like a ſaw with the teeth turned towards their heads. *Oppianus* write's, that their ſtings are more poiſonous then the Perſian's arrows, for the force of the poiſon remaineth, the fiſh beeing dead, which will kill not onely living creatures, but plants alſo. Fiſher-men, when they catch this fiſh, preſently ſpoil him of his ſting, leſt they ſhould bee hurt therewith. But if by chance they bee hurt therewith, then take they forth his liver, and lay it to the wound; furthermore, the fiſh beeing burnt and made into powder, is the true antidote of his wound. The Sting-Ray live's in muddie places near the ſhoar, upon the fiſhes that hee hunteth and cattheth with his ſting, haveing the teeth thereof turned towards his head for the ſame purpoſe. Hee is not unlike a Ray, and I have here given you his figure.

The ſymptoms.

*Lib. 9. cap. 48.*

The virulencie of her ſting.

*The figure of a* Sting-Ray.



## CHAP. XXXIII.

*Of the* Lepus marinus, *or Sea-hare.*

PLinie call's the Sea-hare, a maſs or deformed piece of fleſh. *Galen* ſaith it is like a Snail taken forth of the ſhell. It is exceedingly poiſonous in the judgment of the Antients; wherefore it is not amiſs to ſet down the deſcription of it, leſt wee might eat it at unawares, too earneſtly view it, or ſmell thereto, as alſo that wee may uſe it againſt the poiſon thereof; it is an inhabitant not onely of the ſea, but alſo of lakes of ſea-water, eſpecially ſuch as are muddie; it is of the ſame color as the hair of the land-hare is, it hath a hole in the head, out of which hee putteth a certain piece of fleſh, and pluck's it back again when as hee is ſeen. *Paulus*, *Aëtius*, *Plinie*, *Galen* and *Nicander* are of one opinion, and agree in this, that if a woman big with childe do too earneſtly look upon one, ſhee will vomit, and preſently after abort. They which have drunk this poiſon, ſaith *Dioſcorides*, are troubled with pain in the bellie, and their urine is ſtopped. If they do make water, then is it bloodie; they run down with ſtinking ſweat, which ſmell's of fiſh; a cholerick vomiting ſomtimes mixed with blood enſue's thereon.

The deſcription of the Sea-hare.

The earneſt beholding of a Sea-hare will cauſ abortion.

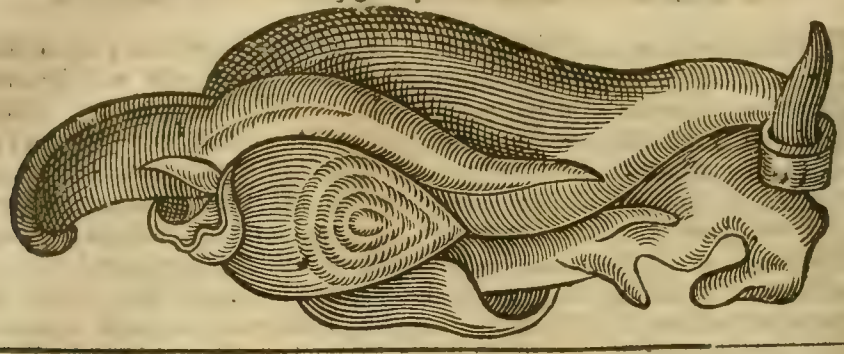
*Aëtius* write's, that all their bodies turn yellow, their faces ſwell, and their feet, but chiefly their genital member, which is the cauſ they cannot make water freely. *Galen* write's, that it is the propertie of the Sea-hare to exulcerate the lungs. Their antidote is Aſſe's-milk, muskadine, or honied-wine continually drunken, or a decoction of the roots and leavs of

The ſymptoms.

The antidote.

Mallows. It is good for the falling away of the hair. I have here given you the figure thereof out of *Rondeletius* his book of Fiſhes.

*The figure of a Sea-Hare.*



## CHAP. XXXIV.

*Of the poiſon of Cats.*

NOt onely the brain of a Cat, beeing eaten, is poiſonous and deadlie to man, but alſo their hair, their breath, yea and their verie preſence to ſom proov deadlie. For although anie hair devoured unawares, may bee enough to choak one, by ſtopping the inſtruments of reſpiration, yet the hairs of a Cat by a certain occult propertie, are judged moſt dangerous in this caſe: beſides alſo, their breath is infected with a certain hurtful malignitie. For *Matthiolus* ſaith, that hee knew ſom, who beeing ſo delighted with Cats, that they could never go to bed without them, have by ſo often drawing in the air with their breath, fallen into a conſumption of the lungs, which occaſioned their death. Moreover, it is manifeſt that the verie ſight of their eies is hurtful, which appear's by this, that ſom but ſeeing or hearing them, preſently fall down in a ſwound; yet I would not judg that to happen by the malicious virulencie of the Cat, but alſo by the peculiar nature of the partie, and a qualitie generated with him, and ſent from heaven. When as, ſaith *Matthiolus*, a certain Germane in winter-time, came with us into a ſtove to ſupper, whereas were divers of our acquaintance, a certain woman, knowing this man's nature, leſt that hee ſhould ſee her kitling which ſhee kept, and ſo ſhould go away in a chafe, ſhee ſhut her up in a cup-board in the ſame chamber. But for all that hee did not ſee her, neither heard her crie, yet within a little ſpace, when hee had drawn in the air, infected with the breath of the Cat, that qualitie of temperament, contrarie, or enemie to Cats, beeing provoked, hee began to ſweat, to look pale, and to crie out (all of us admireing it) *Here lie's a Cat in ſom corner or other*; neither could hee bee quiet till the Cat was taken away. But ſuch as have eaten the brains of a Cat, are taken with often *Vertigo's*, and now and then becom fooliſh and mad: they are helped by procureing vomit, and takeing the Antidote againſt this poiſon, that is, half a ſcruple of Muſk, diſſolved and drunk in wine. There bee ſom who preſcribe the confection *Diamoſchum* to bee taken everie morning, four hours before meat. By this you may gather, that it is not ſo fabulous that the common ſort report, that Cats will kill or harm children; for lying to their mouths with the weight of their whole bodies, they hinder the paſſage forth of the fuliginous vapors, and the motion of the cheſt, and infect and ſtifle the ſpirits of tender infants, by the peſtiferous air and exhalation which they ſend forth.

A Cat's hair moſt ſubject to choak.

The breath of a Cat moſt hurtful ro the lungs.

An hiſtorie.

A wonderful antipathie between a man and a Cat.

The Antidote againſt the brains of a Cat.

Cats dangerous for children.

## CHAP. XXXV.

*Of certain poiſonous Plants.*

HAveing deſcribed the poiſons that com from living creatures, I com to ſpeak of ſuch as are from Plants, beginning with the Sardonian herb, which is alſo called *Apium riſus*: this is a kinde of *Ranunculus*, or Crow-foot: (and, as it is thought, the round-leaved water Crow-foot, called Marſh-crow-foot, or Spear-wort) it taketh away the underſtanding of ſuch as eat thereof, and by a certain diſtention of the nervs, contract's the cheeks, ſo that it make's them look as if they laughed; from this affect came that proverbial ſpeech of the *Sardonian laughter*, taken in evil part. His *Bezoar*, as one may term it, is the juice of Balm.

The juice, fruit, and ſubſtance of *Napellus* taken inwardly, killeth a man the ſame day, or at the furtheſt in three daies: yea, and ſuch as eſcape the deadlie force thereof by the ſpeedie and convenient uſe of Antidotes, fall into an hectick fever, or conſumption, and becom ſubject to the falling-ſickneſs, as *Avicen* affirmeth. And hence it is, that barbarous people poiſon their arrows therewith. For the lips are forthwith inflamed, and the tongue ſo ſwell's, that by reaſon thereof it cannot bee contained in the mouth, but hang's out with great horror; their eies are inflamed, and ſtand forth of their head, and they are troubled with a *Vertigo* and ſwounding,

*Apium riſus.*

His Antidote.

*Napellus*, or Monkſ-hood.

ſwounding, they becom ſo weak that they cannot ſtir their legs, they are ſwoln and puffed in their bodies, the violence of the poiſon is ſo great. The Antidote thereof is a certain little creature like a * Mouſ, which is bred, and live's on the root of *Napellus*, beeing dried and drunk in powder, to the weight of two drams. In want hereof, you may uſe the ſeed of Raddiſh or Turnips to drink, and annoint the bodie alſo with oil of Scorpions.

* Our Autor is deceived by the *Arabians*, who (it may bee) miſtook the greek word μῦς, and in ſtead thereof reade μυῶ · for a Flie, a Mouſ; for there is no Mouſ to bee found, but whole ſwarms of Flies, which feed thereon: you may finde the deſcription of an Antidote made with them in *Lobel's Stirp. adverſ. pag.* 302.

*Dorycinum* and *Solanum Manicum*, or deadlie Night-ſhade, are not much different in their mortal ſymptoms or effects. *Dorycinum* beeing drunk, reſembleth milk in taſte, it cauſeth continual hicketting, it troubleth the tongue with the weight of the humor, it cauſeth blood to bee caſt forth of the mouth, and certain mucous matter out of the bellie, like that which commeth away in the bloodie flux. A remedie hereto are all ſhell-fiſhes, as well crude as roſted, alſo Sea-Lobſters and Crabs, and the broth or liquor wherein they are boiled, beeing drunk. Now the root of *Solanum Manicum* drunk in the weight of one dram in wine, cauſeth vain and not unpleaſing imaginations, but double this quantitie cauſeth a diſtraction or alienation of the minde for three daies; but four times ſo much kill's. The remedies are the ſame as theſe preſcribed againſt *Dorycinum*. *Dorycinum* and *Solanum Manicum*, or deadlie Night-ſhade. The ſymptoms.

Hen-bane drunken, or otherwiſe taken inwardly by the mouth, cauſeth an alienation of the minde like drunkenneſs; this alſo is accompanied with an agitation of the bodie, and exſolution of the ſpirits like ſwounding. But amongſt others, this is a notable ſymptom, that the patients ſo dote, that they think themſelvs to bee whipped: whence their voice becom's ſo various, that ſomtimes they bray like an Aſs or Mule, neigh like an Horſ, as *Avicen* write's. The Antidote is piſtick nuts eaten in great plentie, treacle alſo and mithridate diſſolved in ſack, alſo worm-wood, *rue* and milk. Hen-bane. The Antidote.

Of Muſhroms, ſom are deadlie and hurtfull of their own kinde and nature, as thoſe, which broken, preſently becom of divers colours, and putrefie: (ſuch as *Avicen* ſaith thoſe are which be found of a grayiſh or blewiſh colour) others though not hurtfull in qualitie, yet eaten in greater meaſure then is fitting, becom deadlie; for ſeeing by nature they are verie cold and moiſt, and conſequently abound with no ſmall viſcoſitie, as the excrementitious phlegm of the earth or trees whereon they grow, they ſuffocate and extinguiſh the heat of the bodie, as overcom by their quantitie, and ſtrangle as if one were hanged, and laſtly kill. Verily I cannot chuſe, but pittying Gourmondizers, who though they know that Muſhroms are the ſeminarie and gate of death, yet do they with a great deal of doo, moſt greedily devour them; I ſay, pittying them, I will ſhew them, and teach them the art, how they may feed upon this ſo much deſired diſh, without the endangering of their health. Know therefore that Muſhroms may bee eaten without danger, if that they bee firſt boiled with wilde pears: but if you have no wilde pears, you may ſupplie that defect with others which are the moſt harſh, either newly gathered, or dried in the ſun. The leavs, as alſo the bark of the ſame tree, are good, eſpecially of the wilde; for pears are their Antidote: yet *Conciliator* give's another, to wit, garlick eaten crude, whereto in like ſort vineger may bee fitly added, ſo to cut and attenuate the tough, viſcous and groſs humors, heaped up, and in danger to ſtrangle one by the too plentiful eating of Muſhroms, as it is delivered by *Galen*. Muſhroms. Their Antidote. *In 5. epidemi.*

*Ephemerum*, which ſom call *Colchicum* or *Bulbus ſylveſtris*, that is, medow ſaffron, beeing taken inwardly, cauſeth an itching over all the bodie, no otherwiſe then thoſe that are nettled, or rubbed with the juice of a Squill. Inwardly they feel gnawings, their ſtomach is troubled with a great heavineſs, and the diſeaſ encreaſing, there are ſtreaks of blood mixed with the excrements. The Antidote thereof is womans milk, Aſſes or Cows-milk drunken warm, and in a large quantitie. *Colchicum*, or Medow-Saffron. The Antidote.

Mandrag taken in great quantitie, either the root or fruit cauſeth great ſleepineſs, ſadneſs, reſolution and languiſhing of the bodie, ſo that after many ſcritches and gripeings, the patient fall's aſleep in the ſame poſture as hee was in, juſt as if hee was in a Lethargie. Wherefore in times paſt they gave Mandrag to ſuch as were to bee diſmembred. The apples, when as they are ripe, and their ſeeds taken forth, may bee ſafely eaten, for beeing green and with their ſeeds in them, are deadlie. For there ariſeth an intolerable heat, which burn's the whole ſurface of the bodie, the tongue and mouth wax drie, by reaſon whereof they gape continually, ſo to take in the cold air; in which caſe unleſs they bee preſently helped, they die with convulſions. But they may eaſily bee helped, if they ſhall preſently drink ſuch things as are convenient therefore. Amongſt which, in *Conciliator*'s opinion, excell raddiſh-ſeeds eaten with ſalt and bread for the ſpace of three daies. Sneeſing ſhall bee procured, if the former remedie do not quickly refreſh them, and a decoction of Coriander or Pennie-royall in fair water ſhall bee given them to drink warm. Mandrag. The cure.

The ungrateful taſte of the juice of black poppie, which is termed *Opium*, as alſo of Mandrag, eaſily hinder's them from beeing put into meat or drink, but that they may bee diſcerned, and chiefly for that neither of them can kill, unleſs they bee taken in a good quantitie. But becauſ there is danger, leſt they bee given in greater quantitie then is fitting by the ignorance of Phyſicians, or Apothecaries, you may by theſe ſigns finde the error. *Opium*. Why not uſed in poiſonings.

There

The ſymptoms.

There enſue's heavie ſleep, with a vehement itching, ſo that the patient oftimes is forced thereby to caſt off his dull ſleep wherein hee lay, yet hee keep's his eie-lids ſhut, beeing unable to open them. But by this agitation there flow's out ſweat, which ſmel's of *orium*, the bodie waxeth pale, the lips burn, the jaw-bone is relaxed, they breath little and ſeldom. When as their eies wax livid, unleſs they bee drawn aſide, and that they are depreſſed from their orb, wee muſt know that death is at hand. The remedie againſt this is two drams of the powder of *Caſtoreum* given in wine.

Hemlock.

Hemlock drunken, cauſſeth *Vertigo's*, troubleth the minde, ſo that the patients may bee taken for mad men; it darkneth the ſight, cauſſeth hicketting, and benum's the extreme

The ſymptoms

parts, and laſtly ſtrangle's with convulſions, by ſuppreſſing or ſtopping the breath of the Arterie. Wherefore at the firſt, as in other poiſons, you muſt endeavor to expell it by vomit; then inject glyſters, to expell that which is got into the guts; then uſe wine without mixture, which is verie powerful in this caſe. *Peter Aponenſis* think's the Bezoar or Antidote thereof to bee a potion of two drams of Treacle, with a decoction of *Dictamnus* or *Gentian* in wine. Hee which further deſire's to enform himſelf of the effects of Hemlock, let him read *Matthiolus* his commentarie upon *Dioſcorides*, where as hee treat's of the ſame ſubject.

The Antidote.

*In lib. 6. dioſc.*

*Aconitum.*

*Aconitum* called of *Aconis* a town of the *Periendines*, where as it plentifully grow's. Accordind to *Matthiolus*, it kill's Wolvs, Foxes, Dogs, Cats, Swine, Panthers, Leopards, and all wilde beaſts, mixed with fleſh, and ſo devoured by them, but it kill's mice by onely ſmelling thereto. Scorpions, if touched by the root of Aconite, grow numb and torpid, and ſo die thereof; arrows or darts dipped therein, make incureable wounds. Thoſe who have drunk Aconite, their tongue forthwith waxeth ſweet with a certain aſtriction, which within a while turneth to bitterneſs; it cauſſeth a *Vertigo*, and ſhedding of tears, and a heavineſs or ſtraitneſs of the cheſt and parts about the heart; it make's them break winde downwards, and make's all the bodie to tremble. *Plinie* attribute's ſo great celeritie and violence to this poiſon, that if the genitals of female creatures bee touched therewith, it will kill the ſame daie; there is no preſenter remedie then ſpeedie vomiting after the poiſon is taken. But *Conciliator* think's *Ariſtolochia* to bee the Antidote thereof. Yet ſom have made it uſeful for man by experimenting it againſt the ſtinging of Scorpions, beeing given warm in wine. For it is of ſuch a nature, that it killeth the partie unleſs it finde ſomthing in him to kill, for then it ſtrive's thererwith as if it had found an adverſarie. But this fight is onely when as it finde's poiſon in the bodie; and this is marvelous that both the poiſons beeing of their own nature deadlie, ſhould die together, that man may by that means live. There are divers ſorts thereof, one whereof hath a flower like an helmet, as if it were armed to man's deſtruction; but the other here delineated hath leavs like to ſow's-bread, or a cucumber, and a root like the tail of a Scorpion.

*Lib. 27. cap. 2.*

Aconite good againſt the poiſon of Scorpions.

The differences.

*The figure of a certain kinde of Aconite.*

The Yew.

Trees alſo are not without poiſon, as the Yew and Walnut tree may witneſs: Cattel if they feed on the leavs of Yew, are killed therewith. * But men, if they ſleep under it, or ſit under the ſhadow thereof, are hurt therewith, and oftimes die thereof. But if they eat it, they are taken with a bloodie flux, and a coldneſs over all their bodies, and a kinde of ſtrangling or ſtoppage of their breath. All which things the Yew cauſſeth, not ſo much by an elementarie and cold qualitie, as by a certain occult malignitie, whereby it corrupteth the humors, and ſhaveth the guts. The ſame things are good againſt this, as wee have ſet down againſt Hemlock; *Nicander* affirm's, that good wine beeing drunken is a remedie thereto. There is alſo malignitie in a Wall-nut-tree, which *Grevinus* affirm's that hee found by experience, whil'ſt hee unawares ſate under one and ſlept there in the mid'ſt of Summer. For wakeing, hee had a ſenſ of cold over all his bodie, a heavineſs of his head, and pain that laſted ſix daies. The remedies are the ſame as againſt the Yew.

* This is true in ſom countries, as in Provence, Italie, Greece, &c. but it is not ſo here with us in England, as both Lobel and dailie experience can teſtifie.

The Antidote.

The Wall-nut tree.

CHAP

## CHAP. XXXVI.

### *Of* Bezoar, *and Bezoartick medicines.*

FOR that wee have made mention of *Bezoar*, in treating of the remedies of poisons, I judg I shall not do amiss, if I shall explain, what the word mean's, and the reason thereof. Poison absolutely taken is that which kill's by a certain specifick antipathie contrarie to our nature. So an Antidote or Counter-poison is by the Arabians in their mother-tongue termed *Bedezahar*, as the preservers of life. This word is unknown to the Greeks and Latines, and in use onely with the Arabians and Persians, becaus the thing it self first came from them, as it is plainly shewed by *Garcias ab horto*, Physician to the Vice-roy of the Indies, in his historie of the Spices and *Simples* of the East-Indies. In Persia (saith hee) and a certain part of India is a certain kinde of Goat called *Pazain* (wherefore in proper speaking, the stone should bee termed *Pazar*, of the word *Pazain*, that signifie's a Goat; but wee corruptly term it *Bezar* or *Bezoar*) the color of this beast is commonly reddish, the height thereof indifferent, in whose stomach concrete's the stone called *Bezoar*; it grow's by little and little about a straw or som such like substance in scales like to the scales of an onion, so that when as the first scale is taken off, the next appear's more smooth and shineing as you still take them away, the which amongst others is the sign of good *Bezoar* and not adulterate. This stone is found in sundrie shapes, but commonly it resemble's an Acorn or Date-stone; it is somtimes of a sanguin color, and otherwhiles of a honie-like or yellowish color, but most frequently of a blackish or dark green, resembling the color of mad Apples, or elsof a Civet-Cat. This stone hath no heart nor kernel in the mid'st, but powder in the cavitie thereof, which is also of the same facultie. Now this stone is light and not verie hard, but so that it may easily bee scraped or rasped like alablaster, so that it will dissolv, beeing long macerated in water; at first it was common amongst us, and of no verie great price, becaus our people who trafficked in Persia, bought it at an easie rate. But after that the faculties thereof were found out, it began to be more rare and dear, and it was prohibited by an Edict from the King of the Countrie, that no bodie should sell a Goat to the stranger-Merchants, unless hee first killed him and took forth the stone, and brought it to the King. Of the notes by which the stone is tried, (for there are manie counterfeits brought hither) the first is alreadie declared; the other is, it may bee blown up by the breath, like an oxe's hide; for if the winde break through, and do not stay in the densitie thereof, it is accounted counterfeit. They use it, induced thereto by our example, not onely against poisons, but also against the bites of venemous beasts. The richer sort of the Countrie purge twice a year, to wit, in *March* and *September*; and then, five daies together they take the powder of this stone macerated in Rose-water, the weight of ten grains at a time: for by this remedie they think their youth is preserved, as also the strength of their members. There bee som who take the weight of thirtie drams; yet the more warie exceed not twelv grains. The same Autor addeth that hee useth it with verie good succes in inveterate melancholick diseases, as the itch, scab, tetters and leprosie; therefore by the same reason it may well bee given again a quartane fever. Besides, hee affirmeth for certain that the powder contained in the mid'st of the stone, put upon the bites of venemous beasts, presently free'th the patient from the danger of the poison, as also applied to to pestilent Carbuncles when they are opened, it draw's forth the venom. But becaus the small pocks and meazles are familiar in the Indies, and oftimes dangerous, it is there given with good succes, two grains each daie in Rose-water. *Matthiolus* subscribeth to this opinion of *Garcias*, witnessing that hee hath found it by frequent experience, that this stone by much exceed's not onely other *simple* medicines of this kinde, but also such as are termed *theriacalia*, and what other Antidotes soever. Hereto also consent's *Abdanalarach*; Wee (saith hee) have seen the stone which they call *Bezahar*, with the sons of *Almirama* the observer of the Law of the God; with which stone heee bought a stately and almost princely hous at *Corduba*.

What poison is.

A sign of true Bezoar.

The use of Bezoar.

*Lib. 5. in Dioscor. cap. 73.*

Som years ago, a certain Gentleman who had one of these stones which hee brought out of Spain, bragged before King *Charls* then beeing at *Clermount in Avern*, of the most certain efficacie of this stone against all manner of poisons. Then the King asked of mee, whether there were anie Antidote which was equally and in like manner prevalent against all poisons? I answered, that nature could not admit it; for neither have all poisons the like effects, neither do they arise from one caus; for som work from an occult and specifick propertie of their whole nature, others from som elementarie qualitie which is predominant. Wherefore each must bee withstood with its proper and contrarie antidote; as to the hot, that which is cold, and to that which assail's by an occult proprietie of form, another which by the same force to oppugn it, and that it was an easie matter to make trial hereof on such as were condemned to bee hanged. The motion pleased the King, there was a Cook brought by the Jailor who was to have been hanged within a while after for stealiug two silver-dishes out of his master's hous. Yet the King desired first to know of him, whether hee

An historie.

No one thing can bee an Antidote against all poisons.

hee would take the poiſon on this condition, that if the Antidote which was predicated to have ſingular power againſt all manner of poiſons, which ſhould bee preſently given him after the poiſon, ſhould free him from death, that then hee ſhould have his life ſaved. The Cook anſwered chearfully, that hee was willing to undergo the hazard, yea, and greater matters, not onely to ſave his life, but to ſhun the infamie of the death hee was like to be adjudged to. Therefore hee then had poiſon given him by the Apothecarie that then waited, & preſently after the poiſon, ſom of the *Bedezahar* brought from Spain, which beeing taken down, within a while after hee began to vomit, and to avoid much by ſtool with grievous torments, and to crie out that his inward parts were burn't with fire. Wherefore beeing thirſtie, and deſireing water, they gave it him; an hour after, with the good leav of the Jailor, I was admitted to him; I finde him on the ground going like a beaſt upon hands and feet, with his tongue thruſt forth of his mouth, his eies fierie, vomiting, with ſtore of cold ſweats, and laſtly, the blood flowing forth by his ears, noſe, mouth, fundament and yard. I gave him eight ounces of oil to drink, but it did him no good, for it came too late. Wherefore at length hee died with great torment and exclamation, the ſeventh hour from the time that hee took the poiſon beeing ſcarcely paſſed. I opened his bodie in the preſence of the Jailor and four others, and I found the bottom of his ſtomach black and drie, as if it had been burn't with a Cauterie; whereby I underſtood hee had *ſublimate* given him; whoſe force the Spaniſh *Bedezahar* could not repreſs, wherefore the King commanded to burn it.

The cauſtick force of *ſublimate.*

## CHAP. XXXVII.

### *Of Mineral Poiſons.*

Minerals or metals are either ſo taken forth of the bowels of the earth, or elſ from fornaces. Of theſe manie are poiſonous, as arſenick, *ſublimate*, *plaſter*, ceruſs, litharg, verdegreaſe, orpiment, filings of Iron, braſs, the load-ſtone, lime and the like. Such as have taken *ſublimate*, the tongue and jaws becom ſtraightned & rough, as if they drunk the juice of unripe *ſervices*: you cannot amend this aſperitie wth lenitive gargariſms but wth labor & time; for aſſoon as it deſcend's into the ſtomach, it ſticketh to it. Therfore preſently after it fret's & exulcerate's; it cauſſeth unquenchable thirſt, and unexplicable torments; the tongue is ſwoln, the heart faint's, the urine is ſuppreſt, the cheſt can ſcarce perform the office of breathing, the bellie is griped, and ſo great pains happen to other extreme parts, that unleſs they bee helped, the patient will die; for preſently will grow upon them, unleſs it bee ſpeedily hindered, the devouring and fierie furie of the poiſon, rending or eating into the guts and ſtomach, as if they were ſeared with an hot iron, and blood floweth out of the ears, noſe, mouth, urinarie paſſage and fundament, and then their caſe is deſperate. Theſe and who elſ ſoever ſhall take anie corrodeing poiſon, ſhall bee cured with the ſame remedies, as thoſe that have taken *Cantharides.*

The ſymptoms of ſuch as have taken *ſublimate.*

Verdegreaſ ſo ſtop's the inſtruments of reſpiration, that it ſtrangle's ſuch as have taken it. The cure is performed by the ſame remedies as help thoſe that have taken Arſenick.

Verdegreaſ.

Litharge cauſſeth a heavineſs in the ſtomach, ſuppreſſeth urine, make's the bodie ſwelled and livid. Wee remedie this, by giveing a vomit preſently, then after it pigeons-dung mixed in ſtrong wine, and ſo drunken. *Peter Aponenſis* wiſheth to give oil of ſweet almonds and figs. Alſo it is good to give relaxing and humecting glyſters, and to annoint the bellie with freſh butter, or oil of lillies.

Litharge.

The ſcales of Braſs drunk by troubling the ſtomach, cauſ a caſting and ſcouring. The remedie is, if the patient forthwith vomit, if hee enter into a bath made of the decoction of Snails, if hee annoint his bellie and breſt with butter or oil of lillies, and inject laxative and humecting glyſters.

The ſcales of Braſs.

The Load-ſtone make's them mad that take it inwardly. The Antidote thereof is the powder of gold and an emerald drunk in ſtrong wine, and glyſters of milk and oil of ſweet almonds.

The Load-ſtone.

The filings of Lead, and the ſcales or *refuſe* of Iron, cauſ great torment to ſuch as take them down. The which wee help with much milk aud freſh butter diſſolved therein, or with oil of ſweet almonds drawn without fire, with relaxing and humecting glyſters uſed until the pain bee perfectly aſſwaged.

Filings of Lead and ſcale of Iron.

*Riſagallum*, Roſe-aker or Katſ-bane, becauſ it is of a moſt hot and drie nature, induce's thirſt and heat over all the bodie, and ſo great colliquation of all the humors, that although the patient by medicines ſpeedily given eſcape death, yet can they not dureing the reſidue of their lives, uſe their members as they formerly did, beeing deſtitute of their ſtrength, by reaſon of the great drineſs and contraction of the joints The Antidote thereof is oil of Pine-kernels ſpeedily given, and that to the quantitie of half a pinte; then procure vomit, then give much milk to drink, and glyſters of the ſame, and let them ſup up fat broths.

Arſnick, Roſe-aker or Ratſ-bane.

Unquench't-Lime and *Auripigmentum*, or Orpiment drunk, gnaw the ſtomach and guts with

with great tormenting pain, and cauſ unquenchable thirſt, an aſperitie of the jaws and throat, difficultie of breathing, ſtopping of the urine, and a bloodie flux. They may bee helped by all fat, humecting, and relaxing things which retund the acrimonie, by lenitive potions, and ſuch things as lubricate the bellie; as alſo by creams, and the mucilages of ſom ſeeds, as with a decoction of the ſeeds of *Line*, mallows, marſh-mallows and other ſuch things ſet down at large in the cure of *Cantharides*. Unquenched Lime and Orpiment.

Theſe exceeding acrid and ſtrong waters wherewith Gold-ſmiths and Chymiſts ſeparate gold from ſilver, beeing taken into the bodie, are hard to cure, becauſ they are forthwith diffuſed over all the bodie, firſt burning the throat and ſtomach. Yet it may bee helped by the means preſcribed againſt unquenched Lime and Orpiment. *Aqua fortis.*

Ceruſs cauſeth hicketting and a cough, make's the tongue drie, and the extreme parts of the bodie numb with cold, the eies heavie to ſleep. The patients verie often in the mid'ſt of the day ſee ſom vain phantaſie or apparition, which indeed is nothing; they make a black and oftimes bloodie water, they die ſtrangled unleſs they bee helped. The Antidote, in the opinion of *Aëtius* and *Avicen*, is Scammonie drunk in new wine, or honie and wine, and other diuretick things, and ſuch things as procure vomit, and purge by ſtool. Ceruſs.

*Plaſter*, becauſ it concreteth and becommeth ſtonie in the ſtomach, cauſeth ſtrangulation, by ſtraitning and ſtopping the inſtruments that ſerv for breathing. The patients receiv cure by the ſame remedies, as thoſe who have eaten muſhorms, or drunk Ceruſs: you muſt add Gooſ-greaſ in the glyſters, and annoint the bellie with oil of lillies and butter. *Plaſter.*

## CHAP. XXXVIII.

### *Of Quick-ſilver.*

QUick-ſilver is ſo called becauſ it reſembleth ſilver in the color, and is in perpetual motion, as if it had a ſpirit or liveing ſoul. There is a great controverſie amongſt autors concerning it. For moſt of them affirm it hot, among whom is *Galen*, *Halyabas*, *Rhaſes*, *Ariſtotle*, *Conſtantine*, *Iſack*, *Platearius*, *Nicolas Maſſa*: they maintain their opinion by an argument drawn from things helping and hurting; beſides from this, that it is of ſuch ſubtil parts, that it penetrate's, diſſolv's and perſormeth all the actions of heat upon denſ and hard metals; to wit, it attenuateth, incideth, drieth, cauſeth ſalivation by the mouth, purgeth by the ſtool, mooveth urine and ſweat over all the bodie, neither doth it ſtir up the thinner humors onely, but in like ſort the groſs, tough and viſcous, as thoſe which have the *Lues Venerea* finde by expeience, uſeing it either in ointments or Plaſters. The reaſon why it is ſo called. *Lib.4.ſimp. in 2. practic. c.148. 3.ad almans.4. Meteor.*

Others affirm it verie cold and moiſt, for that put into emplaſters and ſo applied, it aſſwageth pain by ſtupefaction, hindering the acrimonie of puſtles and cholerick inflammations. But by its humiditie it ſofteneth ſcirrhous tumors, diſſolveth and diſſipateth knots and *tophous* knobs; beſides, it cauſeth the breath of ſuch as are annointed therewith to ſtink, by no other reaſon, then that it putrefie's the obvious humor by its great humiditie. *Avicen*'s experiment confirm's this opinion, who affirmeth, that the blood of an Ape that drunk Quick-ſilver, was found concrete about the heart, the carcaſs beeing opened. *Matthiolus* mooved by theſe reaſons, write's that Quick-ſilver killeth men by the exceſſive cold and humid qualitie, if taken in a large quantitie, becauſ it congeal's the blood and vital ſpirits, and at length the verie ſubſtance of the heart, as may bee underſtood by the hiſtorie of a certain Apothecarie, ſet down by *Conciliator*; who, for to quench his feveriſh heat, in ſtead of water, drunk off a glaſ of Quick-ſilver, (for that came firſt to his hands;) he died within a few hours after, but firſt hee evacuated a good quantitie of the Quick-ſilver by ſtool, the reſidue was found in his ſtomach beeing opened, and that to the weight of one pound; beſides, the blood was found concrete about his heart. Others uſe another argument to proov it cold, and that is drawn from the compoſition thereof, becauſ it conſiſt's of Lead and other cold metals. But this argument is verie weak. For unquench't Lime is made of flints and ſtonie matter, which is cold, yet nevertheleſs it exceed's in heat. *Paracelſus* affirmeth that Quick-ſilver is hot in the interior ſubſtance, but cold in the exterior, that is, cold as it com's forth of the *Mine*. But that coldneſs to bee loſt as it is prepared by art, and heat onely to appear and bee left therein, ſo that it may ſerv in ſtead of a tincture in the tranſ-mutation of metals. And verily it is taken for a rule amongſt Chymiſts, that all metals are outwardly cold, by reaſon of the waterie ſubſtance that is predominant in them, but that inwardly they are verie hot, which then appear's when when as the coldneſs together with the moiſture is ſegregated; for by calcination they becom cauſtick. Moreover manie account quick-ſilver poiſon, yet experience denie's it. For *Marianus Sanctius Boralitanus* tell's that hee ſaw a woman, who for certain cauſes and effects, would at ſeveral times drink one pound and a half of quick-ſilver, which came from her again by ſtool without anie harm. Moreover hee affirmeth that hee hath known ſundrie who in a deſperate Colick (which they commonly call *miſerere mei*) have been free'd from imminent death, by drinking three pound of quick-ſilver with water An hiſtorie. *In l.6.Dioſ.c.28 Lib.4.de nat. rerum. Tract.de caſu & offen.*

ter onely. For by the weight it open's and unfold's the twined or bound up gut, and thruſt's forth the hard and ſtopping excrements; hee addeth that others have found this medicine effectual againſt the colick, drunk in the quantitie of three ounces. *Antonius Muſa* write's, that hee uſually giveth Quick-ſilver to children readie to die of the worms. *Avicen* confirmeth this, averring that manie have drunk Quick-ſilver without anie harm, wherefore hee mixeth it in his ointments againſt ſcales and ſcabs in little children; whence came that common medicine amongſt countrie people to kill lice by annointing the head with Quick-ſilver mixed with butter or *axungia*. *Matthiolus* affirmeth that manie think it the laſt and chiefeſt remedie to give to women in travel that cannot bee delivered. I proteſt to ſatisfie my ſelf concerning this matter, I gave to a whelp a pound of Quick-ſilver, which beeing drunk down, it voided without anie harm by the bellie. Whereby you may underſtand that it is wholly without anie venemous qualitie. Verily it is the onely and true Antidote of the *Lues Venerea*, and alſo a verie fit medicine for all malign ulcers, as that which more powerfully impugn's their malignitie then anie other medicines that work onely by their firſt qualities. Beſides, againſt that contumacious ſcab, which is vulgarly called *Malum ſancti manis*, there is not anie more ſpeedie or certain remedie. Moreover *Guido* write's, that if a plate of lead bee beſmeared or rubbed there with, and then for ſom ſpace laid upon an ulcer, and conveniently faſtned, that it will ſoften the callous hardneſs of the lips thereof, and bring it to cicatrization, which thing I my ſelf have oftimes found true by experience.

Quick-ſilver good for women in travel.

For the diſeaſ called *Malum ſancti manis*.

Certainly before *Guido*, *Galen* much commended Quick-ſilver againſt malign ulcers and cancers. Neither doth *Galen* affirm that lead is poiſonous (which manie affirm poiſonous, becauſ it conſiſt's of much Quick-ſilver) but hee onely ſaith thus much, that water too long kept in leaden pipes and ciſterns, by reaſon of the droſſineſs that it uſeth to gather in lead, cauſeth bloodie fluxes, which alſo is familiar to braſs and copper. Otherwiſe manie could not without danger bear in their bodies leaden bullets dureing the ſpace of ſo manie years, as uſually they do. It is reported. It is declared by *Theodoret Herey* in the following hiſtories, how powerful Quick-ſilver is to reſolv and aſſwage pains and inflammations. Not long ſince, (ſaith hee) a certain Doctor of Phyſick his boy was troubled with *parotides*, with great ſwelling, heat, pain and beating; to him by the common conſent of the Phyſicians ther preſent, I applied an *Anodine* medicine, whoſe force was ſo great, that the tumor manifeeſtly ſubſided at the firſt dreſſing, and the pain was much aſſwaged. At the ſecond dreſſing all the ſymptoms were more mitigated. At the third dreſſing, I wondring, at the ſo great effect of an *Anodine* Cataplaſm, obſerved that there was Quick-ſilver mixed therewith, and this happened through the negligence of the Apothecarie, who mixed the ſimple *Anodine* medicine preſcribed by us, in a mortar wherein but a while before hee had mixed an ointment wherinto Quick-ſilver entred, whoſe reliqus, and ſom part thereof yet remained theeein. This which once by chance ſucceeded well, I afterwards wittingly and willingly uſed to a certain Gentle-woman troubled with the like diſeaſ, poſſeſſing all the region behinde the ears, much of the throat, and a great part of the cheek, when as nature helped by common remedies, could not evacuate neither by reſolution nor ſuppuration, the contained matter greatly vexing her with pain and pulſation. I to the medicine formerly uſed, by the conſent of the Phyſicians, put ſom Quick-ſilver, ſo within a few daies, the tumor was digeſted and reſolved. But ſom will ſay, it reſolves the ſtrength of the nerves and limbs, as you may ſee by ſuch as have been annointed therewith for the *Lues Venerea*, who tremble in all their limbs dureing the reſt of their lives. This is true, if any uſe it too intemperately without meaſure, and a diſeaſ that may require ſo great a remedie; for thus wee ſee the Gilders, Plumbers and ſuch as dig in mines, by the continual aſcent of the vapors of Quick-ſilver to the brain, the fountain of the nervs, by reſolving the ſpirits, and diſſipating the radicall and ſubſtantifick moiſture, maketh them ſubject to the trembling of their joints. Verily, if it bee killed and incorporate with hogſ-greaſ, and a liſt beſmeared therewith, which may encompaſs the bodie like a girdle, it will drive away lice, fleas and *cimices*; and annointed about the navel, it kill's the worms in the guts. There are two ſorts of Quick-ſilver, the one natural, the other artificial. The natural is found running or flowing in the veins and bowels of the earth, and amongſt metals, and in the fornaces of ſilver-mines. The Artificial is made of *minium* (as it is in *Vitruvius*) and of the powder of Ivorie. Alſo it is probable that by art it may beee extracted out of all metals, but chiefly out of Lead and *Cinnabaris*. You may eaſily diſtinguiſh theſe kindes by the dull and blackiſh color, tough and groſs ſubſtance, which as it run's, leav's an impreſſion like melted greaſ, beeing as it were the excrement of lead. The beſt Quick-ſilver of all is pure, clear, thin, and verie white: it may bee cleanſed with the droſs of lead, and becom's more then beeing boiled in ſharp vineger, with *ſage*, roſemarie, *time*, lavander,. Or elſ give it by a pound at a time to a whelp, to drink down, and beeing caſt forth by it, boil it again in vineger, for thus it hath wondrous faculties, and fitly given produceth marvelous effects; nothing is more contrarie thereto then fire. For Quick-ſilver, though of its own nature ponderous, flieth upwards by the force of the fire, and forſaketh gold by that means, then which nothing is more friendlie to it.

*Lib. de comp. med. ſecund. loc.* Againſt malign ulcers.

Againſt the *Parotides*.

Againſt lice and flies, &c. The kindes thereof.

How to purifie it.

CHAP.

## CHAP. XXXIX.

### *Of the Unicorn's horn.*

THere are verie manie at this daie who think themſelvs excellently well armed againſt poiſon and all contagion, if they bee provided with ſom powder of Unicorns-horn, or ſom infuſion made therewith. Therefore I have thought it good to examine more diligently how much truth this inveterate, and grounded opinion hath. The better to perform this task, I will propound three heads, whereto I will direct my whole diſcourſ. The firſt ſhall bee of the ſignification of this word *Unicorn*. The ſecond, whether there bee anie ſuch thing really and truly ſo called, or whether it bee not rather imaginarie; like as the *Chimera* and *Tragelaphus?* The third, whether that which is ſaid to bee the horn of ſuch a beaſt, hath anie force or facultie againſt poiſons? For the firſt, that is, the name, it is ſomwhat more obſcure what the word (*beeing Licorn*) in French may ſignifie, then what the Latin or Greek word is. For the French name is further from the word and ſignification; but it is ſo clear and manifeſt, that this word *Unicornis* amongſt the Latines ſignifieth a beaſt haveing but one horn, as it is vulgarly known; the ſame thing is meant by the Greek word *Monoceros*. But now for the ſecond, I think that beaſt that is vulgarly called and taken for an Unicorn, is rather a thing imaginarie then really in the world. I am chiefly induced to believ thus, by theſe conjectures. Becauſ of thoſe who have travelled over the world, there is not one that profeſſeth that ever hee did ſee that creature. Certainly the Romans conquered the world, and beeing moſt diligent ſearchers after all things which were rare and ſo excellent, if anie where in anie corner of the world this beaſt could have been found, they would have found it out, and engraven it upon their coins, or arms, as they did Crocodiles, Elephants, Eagles, Panthers, Lions, Tigers, and other creatures unknown to theſe countries. For theſe that have written of the Unicorn, either that they have heard, or that hath bren delivered by tradition, or what they in their own mindes and fancies have conceived, you ſhall ſcarce finde two that agree together, either in the deſcription of the bodie, or in the nature and condition of her. *Plinie* write's, that Unicorns are for the faſhion of their bodies like to an Horſ; that is, as *Cardane* interpret's it, of the bigneſs of an Horſ, with the head of an Hart, the feet of an Elephant, the tail of a *Bore*, with one black horn in the mid'ſt of his fore-head, of the length of two cubits. *Munſter*, who (as *Matthiolus* jeſt's) never ſaw Unicorns beſides painted ones, doth on the contrarie affirm them not to bee of the bigneſs of an Horſ, but of an Hinde-calf of three months old, not with feet like an Elephant, but cleft like thoſe of Goats, with an horn not onely of two, but oftimes of three cubits long, of a Weazel-color, with a neck not verie long, nor verie hairie, but haveing few and ſhort hairs hanging to the one ſide of the neck, the legs are lean and ſmall, the buttocks high, but verie hairie. *Cardane* diſſenting from both theſe, write's, that hee hath an horn in the mid'ſt of his fore-head, but that it is onely the length of three fingers. *Andrew Thevet* mention's an Unicorn ſeen by a certain Turkiſh Sangjach, which was of the bigneſs of a Bull of five or ſix moneths old, and had one horn, but that not in the mid'ſt of the fore-head, but upon the top of the crown of the head; hee was legg'd and footed like an Aſs, but longer haired, and had ears not much unlike the *Rangifer*, a beaſt not unknown in the *ſubpolare* or northern countries.

what the name imports.

That there is no ſuch beaſt as an *unicorn*.

*Lib. 8. cap. 21.*

*Munſters* opinion concerning *unicorns*.

*Tom. 1. lib. 5. Cap. 5. coſmogr.*

Thus various therefore is the report concerning the ſhape of this Beaſt. Neither is there leſs difference concerning her nature and conditions. For *Plinie* write's, that the Unicorn is a moſt fierce beaſt, and hath a great bellowing voice, and that ſhee cannot therefore bee taken alive. *Cardane* render's a reaſon of this fierceneſs, *Becauſ* (ſaith hee) *it inhabit's the deſerts of Æthiopia, a region ſqualid, and filthie, abounding with Toads, and ſuch like venemous creatures*. Others on the contrarie affirm her to bee of a moſt milde, amiable, and gentle nature of all others, unleſs one purpoſely offend her, or uſe her too harſhly; for ſeeing ſhee feed's not by ſtooping her head to the ground, becauſ ſhee is hindered therefrom by the length of her horn, ſhee muſt neceſſarily feed upon the fruit that hangeth upon trees; out of cratches or man's hand ſhee fereleſly and harmleſly takes all manner of fruits, herbs, ſheaves of corn, apples, pears, oranges and pulſ. And herein they have proceeded ſo far, that they feign they will love Virgins, entiſed by their beautie, ſo that ſtaied in the contemplation of them, and allured by their entiſements, they by this means are often taken by hunters. In this opinion is *Lewes Vartoman*, who denies that Unicorns are wilde or fierce; for hee ſaith that hee ſaw two, which were ſent out of *Ethiopia* to the Sultan, who kept them ſhut up in *Penns*, in *Mecha*, a citie of *Arabia felix*, renowned by the Sepulcher of *Mahomet*. *Thevet* traveling thither, tel's that hee diligently inquired of the inhabitants, what there opinion was of ſuch a beaſt, yet could hee never hear anie tidings thereof. Whence it is eaſie to diſcern, that ſuch beaſts have neither been in our, nor in *Vartoman's* times. The ſo great varietie of diſſenting opinions, eaſily induceth mee to beleiv that this word, *Unicorn*, is not the proper name of anie beaſt in the world, and that it is a thing onely feigned by Painters, and Writers of natural things, to delight the readers and beholders. For as there is but one right waie, but

*Vartomans* opinion of the nature of the *unicorn*.

manie by-waies and windeings, ſo the ſpeech of truth is but one, and that alwaies ſimple and like it ſelf; but that of a lie is diverſ, and which may eaſily refel it ſelf, by the repugnancie and incongruitie of opinions, if one ſhould ſay nothing. What therefore (will ſom ſay) of what creatures are theſe horns, which wee ſee wholly different from others, if they bee not of Unicorns? *Thevet* think's them nothing elſ then Elephants bones turned and made into the faſhion that wee ſee them; for thus in the Eaſtern Countries, ſom craftie merchants and cunning companions turn, hollow, and beeing ſoftened, draw to what length they pleaſ the teeth of the fiſh Rohard, which live's in the Red and Ethiopian Sea, and beeing ſo handled, they ſell them for Unicorn's horn. Verily that which is termed Unicorn's horn, beeing burnt, ſend's forth a ſmell like to Ivorie. Now *Cardanus* affirm's that the teeth and bones of Elephants made ſoft by art, may bee drawn forth, and brought into what form you pleaſ, like as Ox-bones are. For what is there in the world which the thirſting deſire of gold will not make men to adulterate and counterfeit? But it is time that wee com to the third ſcope. Grant there bee Unicorns, muſt it therefore follow that their horns muſt bee of ſuch efficacie againſt poiſons? If wee judg by events, and the experience of things, I can proteſt thus much, that I have often made trial thereof, yet could I never finde anie good ſucceſs in the uſe thereof againſt poiſons, in ſuch as I have had in cure. If the matter muſt bee tried by witneſſes and autorities, a great part of the Phyſicians of better note have long ſince bid it adieu, and have detracted from the divine and admirable vertues for which it formerly was ſo much deſired. And this they have don, mooved thereto by manie juſt, but two eſpecial reaſons. The firſt is of *Rondeletius*, who in this caſe affirm's that horns are endued with no taſte nor ſmell; and therefore have no effect in phyſick, unleſs it bee too drie. Neither (ſaith hee) am I ignorant that ſuch as have them, much predicate their worth, ſo to make the greater benefit and gain by them, as of the ſhaveings or ſcrapeings of Unicorn's horn, which they ſell for the weight in gold, as that which is ſingular good againſt poiſons and worms; which things, I think, Hart's-horn and Ivorie do no leſs effectually perform; which is the cauſ why, for the ſame diſeaſ, and with the like ſucceſs, I preſcribe Ivorie to ſuch as are poor, and Unicorn's horn to the rich, as that they ſo much deſire. This is the opinion of *Rondeletius*, who, without anie difference, was wont, for Unicorn's horn, to preſcribe not onely Hart's-horn or Ivorie, but alſo the bones of Horſes and Dogs, and the ſtones of Myrabalanes. Another reaſon is, that whatſoever reſiſt's poiſon is cordial, that is, fit to ſtrengthen the heart, which is chiefly aſſailed by poiſons; but nothing is convenient to ſtrengthen the heart, unleſs it bee by laudable blood or ſpirit, which two are onely familiar to the heart, as beeing the workhouſ of the arterious blood and vital ſpirits. For all things are preſerved by their like, as they are deſtroied by their contraries; for all things that generate, generate things like themſelvs. But Unicorn's horn, as it contain's no ſmell, ſo neither hath it anie aërie parts, but is wholly earthie and drie; neither can it bee converted into blood by the digeſtive facultie, for as it is without juice, ſo is it without fleſh. For as it cannot bee turned into *Chylus*, ſo neither is it fit to becom *Chymus*, that is, juice or blood. Therefore it is joined to the heart by no ſimilitude, nor familiaritie. Furthermore, there is not a word in *Hippocrates* and *Galen* concerning the Unicorn's horn, who notwithſtanding have in ſo manie places commended Hart's-horn. Therefore D. *Chapelain*, the chief Phyſician of King *Charles* the Ninth, often uſed to ſay, that hee would verie willingly take away that cuſtom of dipping a piece of Unicorn's horn in the King's cup, but that hee knew that opinion to bee ſo deeply ingraffed in the mindes of men, that hee feared, that it would ſcarce bee impugned by reaſon. Beſides (hee ſaid) if ſuch a ſuperſtitious medicine do no good, ſo certainly it doth no harm, unleſs it bee to their eſtates that buy it with gold, or elſ by accident, becauſ Princes, whil'ſt they relie more then is fitting upon the magnified virtues of this horn, neglect to arm themſelvs againſt poiſons by other more convenient means, ſo that death oftimes take's them at unawares. When as upon a time I inquired of *Lewes Duret* the Kings Phyſician and Profeſſor (by reaſon of the great opinion that all learned men juſtly had of his learning and judgment) what hee thought of this horn; Hee anſwered, that hee attributed no faculties thereto: for the confirmation whereof hee rendred the ſecond reaſon I have formerly given, but more largely and elegantly; neither feared hee to affirm it aloud, and in plain words to his auditorie of learned men, comming from all parts to hear him. But if at anie time (ore'com by the fault of the times and place) hee preſcrib'd this horn; that hee did it for no other intent, then to help faintings or ſwoundings that happen by the abundance of ſerous humors, floating in the orifice of the ventricle, which make's men ill diſpoſed, becauſ this mixed with other things endued with the like facultie, hath power to drink up the wateriſh humiditie by its earthie drieneſs. But ſom will replie, that neither the Lemnian, nor Armenian earth, have anie juice in them, neither anie ſmell, nor aërie ſpirit. It is granted; neither truly are ſuch things truly and properly called cordial, but onely by event and accident, for that by the excellent aſtrictive facultie they have, and ſtopping the paſſages of the veſſels, they hinder the poiſon from entring into the heart. This is my opinion of Unicorn's horn, which if anie do not approov of, hee ſhall do mee a favor, if for the publick good, hee ſhall freely oppoſe his; but in the *interim* take this in good part which I have don.

What the ordinarie Unicorns horns are.

The Unicorn's horn is not effectual againſt poiſon.

*Lib. de ponder. cap. 19.*

Horns and bones not effectual unleſs to drie.

In what caſes good.

*The end of the one and twentieth Book.*

# Of the PLAGUE.

## *The twentie second Book.*

### CHAP. I.

*The deſcription of the Plague.*

THe Plague is a cruel and contagious diſeaſ, which everie-where, like a common diſeaſ, invadeing Man and Beaſt, kill's verie manie; being attended, and as it were aſſociated with a continual fever, botches, carbuncles, ſpots, nauſeouſneſs, vomitings, and other ſuch malign accidents. This diſeaſ is not ſo pernicious or hurtful, by anie elementarie qualitie, as from a certain poiſonous and venenate malignitie, the force whereof exceed's the condition of common putrefaction. Yet I will not denie, but that it is more hurtful in certain bodies, times and regions, as alſo manie other diſeaſes, of which *Hippocrates* make's mention. But from hence wee can onely collect, that the force and malignitie of the plague may bee encreaſed, or diminiſhed, according to the condition of the elementarie qualities concurring with it; but not the whole nature and eſſence thereof to depend thereon. What the Plague is. *Sect. 3. aphor.*

This peſtiferous poiſon principally aſſail's the vital ſpirit, the ſtore-houſ and original whereof is the heart, ſo that if the vital ſpirit proov ſtronger, it drive's it far from the heart; but if weaker, it beeing overcom and weakned by the hoſtile aſſault, flie's back into the fortreſs of the heart, by the like contagion infecting the heart, and ſo the whole bodie, beeing ſpread into it by the paſſages of the arteries. How it com's to kill.

Hence it is, peſtilent fevers are ſomtime ſimple and ſolitarie; other-whiles aſſociated with a troop of other affects, as botches, carbuncles, blanes and ſpots, of one or more colors.

It is probable ſuch affects have their original from the expulſive facultie, whether ſtrong or weak, provoked by the malignitie of the rageing matter: yet aſſuredly divers ſymptoms and changes ariſe, according to the conſtitution of the bodie of the patient, and condition of the humor in which the virulencie of the plague is chiefly inherent, and laſtly, in the nature of the efficient cauſ. The original buboes, carbuncles, &c. in the plague.

I thought good, by this deſcription, to expreſs the nature of the plague, at this my firſt entrance into this matter; for wee can ſcarce compreſiend it in a proper definition. For although the force thereof bee definite, and certain in nature, yet it is not altogether certain and manifeſt in mens mindes, becauſ it never happen's after one ſort: ſo that in ſo great varietie, it is verie difficult to ſet down anie thing general and certain.

### CHAP. II.

*Of the Divine cauſſes of an extraordinarie Plague.*

IT is a confirmed, conſtant, and received opinion in all Ages amongſt Chriſtians, that the plague and other diſeaſes, which violently aſſail the life of man, are often ſent by the juſt anger of God puniſhing our offences. The Prophet *Amos* hath long ſince taught it, ſaying, *Shall there bee affliction? ſhall there bee evil in a Citie, and the Lord hath not don it?* On which truly wee ought daily to meditate, and that for two cauſſes: The firſt is, that wee alwaies bear this in minde, that wee enjoy health, live, move, and have our beeings from God, and that it deſcend's from that Father of Light; and for this cauſ wee are alwaies bound to give him great and exceeding thanks. The other is, that knowing the calamities, by ſending whereof the Divine anger proceed's to revenge, wee may at length repent, and leaving the way of wickedneſs, walk in the paths of godlineſs. For thus wee ſhall learn to ſee in God, our ſelvs, the Heaven and Earth, the true knowledg of the cauſſes of the plague, and by a certain Divine Philoſophie teach, God to bee the beginning and cauſ of the ſecond-cauſſes, which cannot well without the firſt cauſ go about nor attempt, much leſs perform anie thing. For from hence they borrow their force, order, and conſtancie of order; ſo that they ſerv as inſtruments for God, who rule's and govern's us, and the whole world, to perform all his works, by that conſtant courſ of order, which hee hath appointed unchangeable from the beginning. Wherefore all the cauſ of a plague is not to bee attributed to theſe near and inferior cauſſes or beginnings, as the Epicures and Lucianiſts commonly *Amos 3. Acts 17.* The ſecond cauſſes have their power from God as the firſt cauſ.

commonly do, who attributeing too much, yea all things to Nature, have left nothing to God's providence. On the contrarie, wee ought to think, and beleev in all our things, That even as God by his omnipotent Power hath created all things of nothing, so hee by his eternal Wisdom preserv's and govern's the same, lead's and incline's them as hee pleaseth, yea verily at his pleasure changeth their order, and the whole cours of nature.

This caus of an extraordinarie Plague, as wee confess and acknowledg, so here wee will not prosecute it anie further, but think fit to leav it to Divines, becaus it exceed's the bounds of Nature, in which I will now contain my self. Wherefore let us com to the natural causses of the Plague.

## CHAP. III.

### *Of the Natural causses of the Plague, and chiefly of the Seminarie of the Plague by the corruption of the Air.*

The general causses of the Plague. *Lib.6.de loc. affectis.*

THe general and natural causses of the Plague are absolutely two, that is, the infection of corrupt air, and a preparation and fitness of corrupt humors to take that infection; for it is noted before out of the doctrine of *Galen*, that our humors may bee corrupted, and degenerate into such an alienation which may equal the malignitie of poison.

How the seasons of the year may bee said to want their seasonablenes.

The air is corrupted, when the four seasons of the year have not their seasonablenes, or degenerate from themselvs, either by alteration, or by alienation: as if the constitution of the whole year bee moist and rainie, by reason of gross and black clouds; if the Winter bee gentle and warm, without anie Northerly winde, which is cold and drie, and by that means contrarie to putrefaction; if the Spring, which should bee temperate, shall bee faultie in anie excess of distemper; if the Autumn shall bee ominous by fires in the air, with stars shooting, and as it were falling down, or terrible comets, never seen without som disaster; if the Summer bee hot, cloudie and moist, and without windes, and the clouds flie from the South into the North. These and such like unnatural constitutions of the seasons of the year, were never better, or more excellently handled by anie, then by *Hippocrates* in his Books *Epidemion*. Therefore the air from hence draw's the seeds of corruption and the pestilence, which at length, the like excess of qualities beeing brought in, it send's into the humors of our bodies, chiefly such as are thin and *serous*. Although the pestilence doth not alwaies necessarily arise from hence, but som-whiles som other kinde of cruel and infectious disease.

How the air may bee corrupted.

But neither is the air onely corrupted by these superior causses, but also by putrid and filthie stinking vapors spread abroad through the air encompassing us, from the bodies and carkasses of things not buried, gapeings and hollownesses of the earth, or sinks and such like places beeing opened: for the sea often overflowing the land in som places, and leaving in the mud or hollownesses of the earth (caussed by earth-quakes) the huge bodies of monstrous fishes, which it hide's in its waters, hath given both the occasion and matter of a plague. For thus in our time, a Whale cast upon the Tuscan shore, presently caussed a plague over all that countrie.

But as fishes infect and breed a plague in the air, so the air beeing corrupted often, causseth a pestilence in the sea among fishes, especially when they either swim on the top of the water, or are infected by the pestilent vapors of the earth lying under them, and riseing into the air through the bodie of the water, the later whereof *Aristotle* saith, hapneth but seldom. But it often chanceth, that the plague rageing in anie countrie, manie fishes are cast upon the coast, and may bee seen lying on great heaps. But sulphureous vapors, or such as partake of anie other malign qualitie, sent forth from places under the ground, by gapeings and gulfs opened by earth-quakes, not onely corrupt the air, but also infect and taint the seeds, plants, and all the fruits which wee eat, and so transfer the pestilent corruption into us, and those beasts on which wee feed, together with our nourishment. The truth whereof *Empedocles* made manifest, who by shutting up a great gulf of the earth, opened in a vallie between two mountains, free'd all Sicilie from a plague caussed from thence.

*Lib.8.hist.anim.*

If windes riseing suddenly shall drive such filthie exhalations from those regions in which they were pestiferous, into other places, they also will carrie the plague with them thither.

If it bee thus, som will say, it should seem that wheresoever stinking and putrid exhalations arise, as about standing-pools, sinks and shambles, there should the Plague reign, and straight suffocate with its noisom poison the people which work in such places: but experience finde's this fals.

Pestiferous putrefaction is far different from ordinarie putrefaction.

Wee do answer, that the putrefaction of the Plague is far different, and of another kinde then this common, as that which partake's of a certain secret malignitie, and wholly contrarie to our lives, and of which wee cannot easily give a plain and manifest reason. Yet that vulgar putrefaction wheresoever it bee, doth easily and quickly entertain and welcom the pestiferous contagion, as often as, and whensoever it com's, as joined to it by a certain familiaritie,

familiaritie, and at length, it ſelf degenerateing into a peſtiferous malignitie, certainly no otherwiſe then thoſe diſeaſes which ariſe in the plague-time, the putrid diſeaſes in our bodies, which at the firſt wanted virulencie and contagion, as Ulcers, putrid Fevers, and other ſuch diſeaſes, raiſed by the peculiar default of the humors, eaſily degenerate into peſtilence, preſently receiving the tainture of the plague, to which they had before a certain preparation. Wherefore in time of the plague, I would adviſe all men to ſhun ſuch exceeding ſtinking places, as they would the plague it ſelf: that there may bee no preparation in our bodies, or humors to catch that infection (without which, as *Galen* teacheth, the Agent hath no power over the Subject, for otherwiſe in a plague-time, the ſickneſs would equally ſeiz upon all) ſo that the impreſſion of the peſtiferous qualitie may preſently follow that diſpoſition.

In a peſtilent conſtitution of the air, all diſeaſes becom peſtilent. *Lib.1.de differ. feb.*

But when wee ſay the air is peſtilent, wee do not underſtand that ſincere, elementarie, and ſimple as it is of its own nature, for ſuch is not ſubject to putrefaction; but that which is polluted with ill vapors riſeing from the earth, ſtanding-waters, vaults, or ſea, and degenerate's, and is changed from its native puritie and ſimplicitie. But certainly amongſt all the conſtitutions of the air, fit to receiv a peſtilent corruption, there is none more fit then an hot, moiſt and ſtill ſeaſon; for the exceſs of ſuch qualities eaſily cauſſeth putrefaction. Wherefore the South winde reigning, which is hot and moiſt, and principally in places near the ſea, there fleſh cannot long bee kept, but it preſently is tainted and corrupted.

How the air may bee ſaid to putrefie.

A Southerly conſtitution of the air is the fuel of the Plague.

Further, wee muſt know, that the peſtilent malignitie which riſeth from the carkaſſes or bodies of men, is more eaſily communicated to men; that which riſeth from oxen, to oxen; and that which com's from ſheep, to ſheep; by a certain ſympathie and familiaritie of Nature: no otherwiſe then the Plague which ſhall ſeiz upon ſom one in a Familie, doth preſently ſpread more quickly amongſt the reſt of that Familie, by reaſon of the ſimilitude of temper, then amongſt others of another Familie, diſagreeing in their whole temper. Therefore the air thus altered and eſtranged from its goodneſs of nature, neceſſarily drawn in by inſpiration and tranſpiration, bring's in the ſeeds of the Plague, and ſo conſequently the Plague it ſelf, into bodies prepared and made readie to receiv it.

## CHAP. IV.

*Of the preparation of humors to putrefaction, and admiſſion of peſtiferous impreſſions.*

HAveing ſhewed the cauſſes from which the air doth putrefie, becom corrupt, and is made partaker of a peſtilent and poiſonous conſtitution; wee muſt now declare what things may cauſ the humors to putrefie, and make them ſo apt to receiv and retain the peſtilent air and venenate qualitie.

Three cauſſes of the putrefaction of humors.

Humors putrefie either from fulneſs, which breed's obſtruction; or by diſtemperate exceſs; or laſtly, by admixture of corrupt matter and evil juice, which ill feeding doth ſpecially cauſ to abound in the bodie: For the Plague often follow's the drinking of dead and muſtie wines, muddie and ſtanding water, which receiv the ſinks and filth of a Citie; and fruits and pulſ eaten without diſcretion in ſcarcitie of other corn, as Peaſ, Beans, Lentils, Vetches, Acorns, the roots of Fern, and Graſs made into bread. For ſuch meats obſtruct, heap up ill humors in the bodie, and weaken the ſtrength of the faculties, from whence proceed's a putrefaction of humors, and in that putrefaction a preparation and diſpoſition to receiv, conceiv, and bring forth the ſeeds of the Plague: which the filthie ſcabs, malign ſores, rebellious ulcers, and putrid fevers, beeing all fore-runners of greater putrefaction and corruption, do teſtifie. Vehement paſſions of the minde, as anger, ſorrow, grief, vexation and fear, help forward this corruption of humors, all which hinder nature's diligence and care of concoction: For as in the Dog-Daies, the lees of wine ſubſideing to the bottom, are by the ſtrength and efficacie of heat drawn up to the top, and mixed with the whole ſubſtance of the wine, as it were by a certain ebullition, or working; ſo melancholick humors, beeing the dregs or lees of the blood, ſtirred up by the paſſions of the minde, defile or taint all the blood with their feculent impuritie.

Paſſions of the minde help forward the putrefaction of the humors.

Wee found that ſom years agon by experience, at the battel of S. *Dennis*. For all wounds, by what weapon ſoever they were made, degenerated into great and filthie putrefactions and corruptions, with fevers of the like nature, and were commonly determined by death, what medicines, and how diligently ſoever they were applied; which cauſſed manie to have a falſ ſuſpicion that the weapons on both ſides were poiſoned. But there were manifeſt ſigns of corruption and putrefaction in the blood *let* the ſame day that anie were hurt, and in the principal parts diſ-ſected afterwards, that it was from no other cauſ, then an evil conſtitution of the air, and the mindes of the Souldiers perverted by hate, anger and fear.

## CHAP. V.

*What ſigns in the Air and Earth prognoſticate a Plague.*

WEe may know a Plague to bee at hand and hang over us, if at anie time the air and ſeaſons of the year ſwarv from their natural conſtitution, after thoſe waies I have mentioned before; if frequent and long continuing Meteors, or ſulphureous Thunders infect the air; if fruits, ſeeds and pulſ bee worm-eaten: If Birds forſake their neſts, eggs or young, without anie manifeſt cauſ; if wee perceiv women commonly to abort, by continual breathing in the vaporous air, beeing corrupted and hurtful both to the Embryon and original of life, and by which it beeing ſuffocated, is preſently caſt forth and expelled. Yet notwithſtanding, thoſe airie impreſſions do not ſolely corrupt the air, but there may bee alſo others raiſed by the Sun from the filthie exhalations and poiſonous vapors of the earth and waters, or of dead carkaſſes, which by their unnatural mixture, eaſily corrupt the air, ſubject to alteration, as which is thin and moiſt, from whence divers Epidemial diſeaſes, and ſuch as everie-where ſeiz upon the common ſort, according to the ſeveral kindes of corruptions, ſuch as that famous *Catarrh* with difficultie of breathing, which in the year 1510 went almoſt over all the world, and raged over all the Cities and Towns of France, with great heavineſs of the head (whereupon the French named it *Cuculla*) with a ſtraightneſs of the heart and lungs, and a cough, a continual fever, and ſomtimes raveing.

Why abortions are frequent in a peſtilent ſeaſon.

A *Catarrh* with difficultie of breathing killing manie.

This, although it ſeized upon manie more then it killed, yet becauſ they commonly died who were either let blood, or purged, it ſhewed it ſelf peſtilent by that violent and peculiar and unheard of kinde of malignitie.

The Engliſh *Sweating-ſickneſs.*

Such alſo was the Engliſh *Sweating-ſickneſs*, or *Sweating-fever*, which unuſual, with a great deal of terror invaded all the lower parts of Germanie, and the Low-Couutries, from the year 1525 unto the year 1530, and that chiefly in Autumn.

As ſoon as this peſtilent diſeaſ entred into anie Citie, ſuddenly two or three hundred fell ſick-on one day, then it departed thence to ſom other place. The people ſtrucken with it languiſhing, fell down in a ſwound, and lying in their beds, ſweat continually, haveing a fever, a frequent, quick, and unequal pulſ; neither did they leav ſweating, till the diſeaſ left them, which was in one or two daies at the moſt: yet free'd of it, they languiſhed long after, they all had a beating, or palpitation of the heart, which held ſom two or three years, and others all their life after.

At the firſt beginning it killed manie, before the force of it was known: but afterwards verie few, when it was found out by practice and uſe, that thoſe who furthered and continued their ſweats, and ſtrengthened themſelvs with cordials, were all reſtored. But at certain times many other popular diſeaſes ſprung up, as putrid fevers, fluxes, bloodie-fluxes, catarrhs, coughs, phrenzies, ſquinances, pluriſies, inflammations of the lungs, inflammations of the eies, apoplexies, lithargies, ſmall pocks and meazles, ſcabs, carbuncles, and malign puſtles. Wherefore the Plague is not alwaies, nor everie-where of one and the ſame kinde, but of divers; which is the cauſ that divers names are impoſed upon it, according to the varietie of the effects it bring's, and ſymptoms which accompanie it, and kindes of putrefaction, and hidden qualities of the air.

The Plague is not the definite name of one diſeaſ.

What ſigns in the earth foretell a Plague.

They affirm, when the Plague is at hand, that Muſhroms grow in greater abundance out of the earth, and upon the ſurface thereof manie kindes of poiſonous *inſecta* creep in great numbers, as Spiders, Caterpillers, Butter-flies, Graſs-hoppers, Beetles, Hornets, Waſps, Flies, Scorpions, Snails, Locuſts, Toads, Worms, and ſuch things as are the off-ſpring of putrefaction. And alſo wilde beaſts tired with the vaporous malignitie of their dens and caves in the earth, forſake them; and Moles, Toads, Vipers, Snakes, Lizards, Aſps and Crocodiles are ſeen to flie away, and remoov their habitations in great troops. For theſe, as alſo ſom other creatures, have a manifeſt power by the gift of God, and the inſtinct of Nature, to preſage changes of weather, as rains, ſhowrs, and fair weather; and ſeaſons of the year, as the Spring, Summer, Autumn, Winter, which they teſtifie by their ſinging, chirping, crying, flying, playing, and beating with their wings, and ſuch like ſigns: ſo alſo they have a perception of a Plague at hand. And moreover, the carkaſſes of ſom of them which took leſs heed of themſelvs, ſuffocated by the peſtiferous poiſon of the ill air contained in the earth, may bee everie-where found, not onely in their dens, but alſo in the plain fields.

How peſtilerz vapors may kill plants and trees.

Theſe vapors corrupted not by a ſimple putrefaction, but an occult malignitie, are drawn out of the bowels of the earth into the air, by the force of the Sun and Stars, and thence condenſed into clouds, which by their falling upon corn, trees and graſs, infect and corrupt all things which the earth produceth, and alſo kill's thoſe creatures which feed them; yet brute beaſts ſooner then men, as which ſtoop and hold their heads down towards the ground (the maintainer and breeder of this poiſon) that they may get their food from thence. Therefore at ſuch times, skilful husbandmen, taught by long experience, never drive their

their Cattel or Sheep to paſture, before that the Sun, by the force of his beams, hath waſted and diſſipated into air this peſtiferous dew hanging and abideing upon boughs and leavs of trees, herbs, corn and fruits.

But on the contrarie, that peſtilence which proceed's from ſom malign qualitie from above, by reaſon of evil and certain conjunction of the Stars, is more hurtful to men and birds, as thoſe who are nearer to heaven.

## CHAP. VI.

*By uſeing what cautions in Air and diet, one may prevent the Plague.*

HAveing declared the ſigns fore-ſhewing a Peſtilence: now we muſt ſhew by what means wee may ſhun the imminent danger thereof, and defend our ſelvs from it. No prevention ſeemed more certain to the Antiens, then moſt ſpeedily to remoov into places far diſtant from the infected place, and to bee moſt ſlow in their return thither again. But thoſe, who by reaſon of their buſineſs or emploiments, cannot change their habitation, muſt principally have a care of two things: The firſt is, that they ſtrengthen their bodies, and the principal parts thereof againſt the dailie imminent invaſions of the poiſon, or the peſtiferous and venenate Air. The other, that they abate the force of it, that it may not imprint its virulencie in the bodie; which may bee don by correcting the exceſs of the qualitie inclineing towards it, by the oppoſition of its contrarie. For if it bee hotter then is meet, it muſt bee tempered with cooling things; if too cold, with heating things: yet this will not ſuffice. For wee ought beſides, to amend and purge the corruptions of the venenate malignitie diffuſed through it, by ſmels and perfumes reſiſting the poiſon thereof. The bodie will bee ſtrengthened and more powerfully reſiſt the infected Air, if it want excrementitious humors, which may bee procured by purgeing and bleeding; and for the reſt a convenient diet appointed, as ſhunning much varietie of meats, and hot and moiſt things, & all ſuch which are eaſily corrupted in the ſtomach, and cauſ obſtructions, ſuch as thoſe things which bee made by Comfit-makers; wee muſt ſhun ſatietie and drunkenneſs, for both of them weaken the powers, which are preſerved by the moderate uſe of meats of good juice.

Change of places the ſureſt prevention of the Plague.

Two things of chief account for prevention.

Diet for prevention of the Plague.

Let moderate excerciſes in a cleer Air, and free from anie venemous tainture, precede your meals.

Let the bellie have due evacuation either by Nature or Art.

Let the heart, the ſeat of life, and the reſt of the bowels bee ſtrengthened with Cordials and Antidotes applied and taken (as wee ſhall hereafter ſhew) in the form of epithemes, ointments, emplaſters, waters, pils, powders, tablets, opiates, fumigations, and ſuch like.

Make choice of a pure air, and free from all pollution, and far remote from ſtinking places, for ſuch is moſt fit to preſerv life, to recreate and repair the ſpirits; whereas on the contrarie, a cloudie or miſtie Air, and ſuch as is infected with groſs and ſtinking vapors, dull's the ſpirits, deject's the appetite, make's the bodie faint and ill colored, oppreſſeth the heart, and is the breeder of manie diſeaſes.

Diſcommodities of a cloudie or foggie Air.

The Northern winde is healthful, becauſ it is cold and drie. But on the contrarie, the Southern winde, becauſ it is hot and moiſt, weaken's the bodie by ſloth or dulneſs, open's the pores, and make's them pervious to the peſtiferous malignitie. The Weſtern winde is alſo unwholſom, becauſ it com's near to the nature of the Southern: wherefore the windows muſt bee ſhut up on that ſide of the houſ on which they blow, but opened on the North and Eaſt-ſide, unleſs it happen the Plague com from thence.

Why the South winde is peſtilent.

Kindle a clear fire in all the lodging Chambers of the houſ, and perfume the whole houſ with Aromatick things, as Frankincenſ, Myrrh, Benzoin, *Ladanum*, *Styrax*, Roſes, Mirtle-leavs, Lavander, Roſemarie, *Sage*, Savorie, wilde *Time*, Marjarum, Broom, Pine-apples, peeces of Firr, Juniper-berries, Cloves, Perfume's: and let your cloaths bee aired in the ſame.

The efficacie of fire againſt the Plague.

There bee ſom, who think it a great preſervative againſt the peſtilent Air, to keep a Goat in their houſes, becauſ the capacitie of the houſes, filled with the ſtrong *ſent* which the Goat ſend's forth, prohibit's the entrance of the venemous Air: which ſame reaſon hath place alſo in ſweet ſmels; and beſides it argue's, that ſuch as are hungrie are apter to take the Plague then thoſe who have eaten moderately: for the bodie is not onely ſtrengthened with meat, but all the paſſages thereof are filled by the vapors diffuſed from thence, by which otherwiſe the infected Air would finde a more eaſie entrance to the heart.

Moderate repletion good for prevention.

Yet the common ſort of people yeeld another reaſon for the Goat, which is, that one ill *ſent* drive's away another, as one wedg drive's forth another; which calleth to my minde that which is recorded by *Alexander Benedictus*, that there was a Scythian Phyſician, which cauſſed a Plague, ariſeing from the infection of the Air, to ceaſ, by cauſſing all the dogs, cats, and ſuch like beaſts which were in the Cittie, to bee killed, and caſt their carcaſſes up and down the ſtreets, that ſo by the comming of this new putrid vapor as a ſtranger, the former

A ſtrange Art to drive away the Plague.

peſtiferous

pestiferous infection, as an old gueſt, was put out of its lodging, and ſo the Plague ceaſed, For poiſons have not onely an antipathie with their Antidotes, but alſo with ſom other poiſons.

The antipathie of poiſons with poiſons.

Whil'ſt the Plague is hot, it is not good to ſtir out of door before the riſeing of the Sun: wherefore wee muſt have patience, until hee have cleanſed the Air with the comfortable light of his Beams, and diſperſed all the foggie and nocturnal pollutions, which commonly hang in the Air in dirtie, and eſpecially in low places and Vallies.

All publick and great meetings and aſſemblies muſt bee ſhunned.

Whether in the Plague-time one muſt travel by night or by daie.

If the Plague begin in Summer, and ſeem principally to rage, beeing helped forward by the Summers-heat, it is beſt to perform a journie begun, or undertaken for neceſſarie affairs, rather upon the night-time, then on the daie; becauſ the infection take's force, ſtrength and ſubtiltie of ſubſtance, by which it may more eaſily permeate and enter in by the heat of the Sun; but by night men's bodies are more ſtrong, and all things are more groſs and denſ. But you muſt obſerv a clean contrarie courſ, if the malignitie ſeem to borrow ſtrength and celeritie from coldneſs. But you muſt alwaies eſchew the beams of the Moon, but eſpecially at the *Full*: for then our bodies are more languid and weak, and fuller of excrementitious humors. Even as trees which for that cauſ muſt bee cut down in their ſeaſon of the Moon, that is, in the decreaſ thereof.

Why the Moon is to bee ſhunned.

After a little gentle walking in your Chamber, you muſt preſently uſe ſom means that the principal parts may bee ſtrengthned by ſuſcitateing the heat and ſpirits, and that the paſſages to them may bee filled, that ſo the waie may bee ſhut up from the infection comming from without. Such as by the uſe of garlick have not their heads troubled, nor their inward parts inflamed, as Countrie-People and ſuch as are uſed to it; to ſuch there can bee no more certain preſervative and antidote againſt the peſtiferous fogs or miſts, and the nocturnal obſcuritie, then to take it in the morning with a draught of good wine; for it beeing abundantly diffuſed preſently over all the bodie, fill's up the paſſages thereof, and ſtrengthneth it in a moment.

Garlick good againſt the Plague.

What water to be made choice of in the plague-time.

For water; if the Plague proceed from the tainture of the Air, wee muſt wholly ſhun and avoid Rain-water, becauſ it cannot but bee infected by the contagion of the Air. Wherefore the water of *Springs* and of the deepeſt Wells are thought beſt. But if the malignitie proceed from the vapors contained in the earth, you muſt make choice of Rain-water. Yet it is more ſafe to digeſt everie ſort of water by boiling it, and to prefer that water before other, which is pure and clear to the ſight, and without either taſte or ſmell, and which beſides ſuddenly take's the extremeſt mutation of heat and cold.

## CHAP. VII.

*Of the Cordial Remedies by which wee may preſerv our bodies in fear of the Plague, and cure thoſe already infected therewith.*

*Aqua theriacalis* good againſt the Plague both inwardly taken and outwardly applied.

Uch as cannot eat without much labor, excerciſe and hunger, and who are no lovers of Break-faſts, haveing evacuated their excrements, before they go from home muſt ſtrengthen the heart with ſom Antidote againſt the virulencie of the infection. Amongſt which *Aqua Theriacalis*, or Treacle-water, two ounces, with the like quantitie of *Sack*, is much commended beeing drunk, and rubbing the noſtrils, mouth and ears with the ſame; for the Treacle-water ſtrengthen's the heart, expell's poiſon, and is not onely good for a preſervative, but alſo to cure the diſeaſ it ſelf: For by ſweat it drive's forth the poiſon contained within. It ſhould bee made in *June*, at which time all ſimple medicines, by the vital heat of the Sun, are in their greateſt efficacie.

The compoſition thereof

The compoſition whereof is thus: Take the roots of *Gentian*, *Ciperus*, Tormentil, Diptam, or *Fraxella*, Elecampane, of each one ounce; the leavs of Mullet, *Carduus Benedictus*, Divel's-bit, Burnet, Scabious, Sheeps-ſorrel, of each half a handful; of the tops of *Rue* a little quantitie; Mirtle-berries one ounce; of red Roſe-leavs, the flowers of Bugloſs, Borage and S. John's-wurt, of each one ounce: let them bee all cleanſed, dried and macerated for the ſpace of twentie-four hours in one pound of white wine or Malmſie, and of Roſe-water or Sorrel-water; then let them bee put in a veſſel of glaſs, and add thereto of Treacle and Mithridate, of each four ounces: then diſtill them in *Balneo Mariæ*, and let the diſtilled water bee received in a glaſs-Vial, and let there bee added thereto of Saffron two drams, of Bole-Armenick, *Terra ſigillata*, yellow Sanders, ſhaveings of Ivorie and Hartſ-horn, of each half an ounce; then let the glaſs bee well ſtopped, and ſet in the Sun for the ſpace of eight or ten daies. Let the preſcribed quantitie bee taken everie morning ſo oft as ſhall bee needful. It may bee given without hurt to ſucking children, & to women great with childe. But that it may be the more pleaſant, it muſt be ſtrain'd through an Hippocras-bag, adding thereto ſom ſuger & cinnamon.

Som think themſelvs ſufficiently defended with a root of Elecampane, Zedoarie, or Angelica, rowled in their mouth, or chawed between their teeth.

Others drink everie morning one dram of the root of *Gentian* bruiſed, beeing macerated for

for the ſpace of one night in two ounces of white wine.

Others take Worm-wood-wine.

Others ſup up in a rere egg one dram of *Terra Sigillata*, or of Hartſ-horn, with a little Saffron, and drink two ounces of wine after it.

There bee ſom that do infuſe Bole-Armenick, the roots of *Gentian*, Tormentil, Diptam, the berries of Juniper, Cloves, Mace, Cinnamon, Saffron, and ſuch like, in *aqua vitæ* and ſtrong white wine, and ſo diſtill it in *Balneo Mariæ*.

This Cordial water that followeth is of great vertue. Take of the roots of the long and round *Ariſtalochia*, Tormentil, Diptam, of each three drams, of Zedoarie two drams, *Lignum Aloës*, yellow Sanders, of each one dram, of the leavs of Scordium, St. John's-wurt, Sorrel, *Rue*, *Sage*, of each half an ounce, of *Bay* and Juniper-berries, of each three drams, Citron-ſeeds one dram, Cloves, *Mace*, Nutmegs, of each two drams, of Maſtich, *Olibanum*, Bole-Armenick, *Terra Sigillata*, ſhaveings of Hartſ-horn and Ivorie, of each one ounce, of Saffron one ſcruple, of the *Conſervs* of Roſes, Bugloſs-flowers, water-lillies and old Treacle, of each one ounce, of Camphire half a dram, of *aqua vitæ* half a pinte, of white wine two pintes and a half, make thereof a diſtillation in *Balneo Mariæ*, The uſe of this diſtilled water is even as Treacle water is. A Cordial water.

The Electuarie following is verie effectual. Take of the beſt Treacle three ounces, Juniper-berries and Carduus-ſeeds of each one dram and a half, of Bole-Armenick prepared half an ounce, of the power of the Electuarie *de Geminis* and *Diomargariton frigidum*, the powder of Hartſ-horn, and red Coral, of each one dram: mix them with the ſyrup of the rindes and juice of Pome-Citrons as much as ſhall ſuffice, and make thereof a liquid Electuarie in the form of an Opiate, let them take everie morning the quantitie of a Filberd, drinking after it two drams of the water of Scabious, Cherries, *Carduus Benedictus*, and of ſom ſuch like cordiall thing, or of ſtrong wine. A Cordial Electuarie.

The following Opiate is alſo verie profitable, which alſo may bee made into Tablets. Take of the roots of Angelica, *Gentian*, Zedoarie, Elecampane, of eath two drams; of Citron and Sorrel-ſeeds of each half a dram; of the dried rindes of Citrons, Cinnamon, Bay and Juniper-berrie, and Saffron, of each one ſcruple; of *conſerv* of Roſes and Bugloſs, of each one ounce; and fine hard Suger as much as is ſufficient: make thereof Tablets of the weight of half a dram, let him take one of them two hours before meat: or make thereof an Opiate with equal parts of *conſervs* of Bugloſs and *Mel Anthoſatum*, and ſo adding all the reſt drie and in powder. An Opiate.

Or take of the roots of Valerian, Tormentil, Diptam, of the leavs of *Rue*, of each half an ounce; of Saffron, *Mace*, Nutmegs, of each half a dram; of Bole-Armenick prepared half an ounce; of *conſerv* of Roſes and ſyrup of Lemmons as much as will bee ſufficient to make thereof an Opiate liquid enough. Another.

Or take of the roots of both the *Ariſtolochia's*, of *Gentian*, Tormentil, Diptam, of each one dram and an half; of Ginger three drams; of the leavs of *Rue*, *Sage*, Mints and Pennie-royal, of each two drams; of *Bay* and Juniper-berries, Citron-ſeeds, of each four ſcruples; of *Mace*, Nutmegs, Cloves, Cinnamon, of each two drams; of *Lignum aloës*, and yellow Sanders, of each one dram; of Male-Frankincenſ, *i. Olibanum*, Maſtich, ſhaveings of Hartſ-horn and Ivorie, of each two ſcruple; of Saffron half a dram; of Bole-Armenick, *Terra Sigillata*, red Coral, Pearl, of each one dram; of *conſervs* of Roſes, Bugloſs-flowers, water-lillies and old Treacle, of each one ounce; of loaf-ſuger one pound and a quarter: a little before the end of the makeing it up, add two drams of *confectio Alkermes*, and of Camphire diſſolved in Roſe-water one ſcruple; make thereof an Opiate according to Art, the doſe thereof is from half a dram to half a ſcruple. Another.

Treacle and Mithridate faithfully compounded, excell all Cordial medicines, adding for everie half ounce of them, one ounce and an half of *conſervs* of Roſes, or of Bugloſs, or of Violets, and three drams of Bole-Armenick prepared: Of theſe beeing mix't with ſtirring, and incorporated together, make a *conſerv*: It muſt bee taken in the morning the quantitie of a Filberd. You muſt chuſe that Treacle that is not leſs then four years old, nor above twelv: that which is ſomwhat new, is judged to bee moſt meet for cholerick perſons; but that which is old, for flegmatick and old men. For at the beginning the ſtrength of the *Opium* that enter's into the compoſition thereof, remain's in its full virtue for a year: but afterwards the more years old it waxeth, the ſtrength thereof is more aboliſhed, ſo that at length the whole compoſition becommeth verie hot.

The confection of *Alkermes* is verie effectual both for a preſervative againſt this diſeaſ, and alſo for the cure.

The quantitie of a Filberd of Rubarb, with one Clove chawed or rowled in the mouth, is ſuppoſed to repell the comming of the peſtilent Air: as alſo this compoſition following.

Take of preſerved Citron and Orange pils, of each one dram; of *conſerv* of Roſes, and of the roots of Bugloſs, of each three drams; of Citron-ſeeeds half an ounce; of Anniſ-ſeeds and Fennel-ſeeds, of each one dram; of Angelica-Roots four ſcruples; ſuger of Roſes as much as ſufficeth: Make a Confection, and cover it with leavs of Gold, and take a little of it upon a ſpoon before you go abroad everie morning. A Confection to bee taken in the morning againſt the peſtilent Air.

Or take of Pine-apple-kernels, and Fiſtick-nuts, infuſed for the ſpace of ſix hours in the A March-pane

water

water of Scabious and Roſes, of each two ounces; of Almonds blanched in the fore-named waters half a pound: of preſerved Citron and Orange pills, of each one dram and an half: of Angelica-roots four ſcruples: make them according to art, unto the form of March-pane, or of anie other ſuch like confection, and hold a little piece thereof often in your mouth.

The Tablets following are moſt effectual in ſuch a caſe. Take of the roots of Diptam, Tormentil, Valerian, Elecampane, Eringoes, of each half a dram; of *Bole-Armenick*, *Terra Sigillata*, of each one ſcruple; of Camphir, Cinnamon, Sorrel-ſeeds, and Zedoarie, of each one ſcruple; of the *ſpecies* of the Electuarie *Diamargariton frigidum*, two ſcruples; of *conſerv* of Roſes, Bugloſs, preſerved-Citron-pills, Mithridate, Treacle, of each one dram; of fine Suger diſſolved in *Scabious* and *Carduus*-water, as much as ſhall ſuffice: Make thereof Tablets, of the weight of a dram, or half a dram: take them in the morning before you eat.

Pills of *Ruffus*. The pills of *Ruffus* are accounted moſt effectual preſervatives, ſo that *Ruffus* himſelf ſaith, that hee never knew anie to bee infected that uſed them: the compoſition of them is thus.

Take of the beſt Aloës half a dram, of Gum-*Ammoniacum* two drams, of Myrrh two drams and an half, of Maſtich two drams, of Safforn ſeven grains: put them all together, and incorporate them with the juice of Citrons, or the ſyrup of Limons, and make thereof a maſs, and let it bee kept in leather: Let the patient take the weight of half a dram everie morning two or three hours before meat, and let him drink the water of Sorrel after it, which through its tartneſs, and the thinneſs of its parts, doth infringe the force and power of the malignitie or putrefaction: For experience hath taught us, that Sorrel beeing eaten or chawed in the mouth, doth make the pricking of Scorpions unhurtful. And for thoſe ingredients which do enter into the compoſition of thoſe pills, Aloës doth cleanſ and purge, Myrrh reſiſt's putrefaction, Maſtich ſtrengthen's, Saffron exhilarate's and make's livelie the ſpirits that govern the bodie, eſpecially the vital and animal.

Other pills. Thoſe pills that follow are alſo much approoved. Take of Aloës one ounce, of Myrrh half an ounce, of Saffron one ſcruple, of Agarick in Trochiſces two drams, of Rubarb in powder one dram, of Cinnamon two ſcruples, of Maſtich one dram and an half, of Citron-ſeeds twelve grains: powder them all as is requiſite; and make thereof a maſs with the ſyrup of Maiden-hair: let it bee uſed as aforeſaid.

If the maſs begin to wax hard, the pills that muſt preſently bee taken, muſt bee mollified with the ſyrup of Limons.

Other pills. Take of waſhed Aloës two ounces, of Saffron one dram, of Myrrh half an ounce, of *Ammoniacum* diſſolved in white wine one ounce, of honie of Roſes, Zedoarie, red Sanders, of each one dram, of *Bole-Armenick* prepared two drams, of red Coral half an ounce, of Camphir half a ſcruple: make thereof pills according to art. But thoſe that are ſubject or apt to the hemorrhoids ought not at all, or verie ſeldom to uſe thoſe kindes of pills that do receiv much Aloës.

They ſay, that King *Mithridates* affirmed by his own writeing, that whoſoever took the quantitie of an haſel-nut of the preſervative following, and drank a little wine after it, ſhould bee free from poiſon that day. Take two Wall-nuts, thoſe that be verie drie, two Figs, twentie leavs of *Rue*, and three grains of Salt: beat them, and incorporate them together, and let them bee uſed as is aforeſaid.

This remedie is alſo ſaid to bee profitable for thoſe that are bitten or ſtung by ſom venemous beaſt, and for this onely, becauſ it hath *Rue* in the compoſition thereof. But you muſt forbid women that are with childe the uſe of this medicine; for *Rue* is hot and drie in the third degree, and therefore it is ſaid to purge the womb, and provoke the flowers, whereby the nouriſhment is drawn away from the childe. Of ſuch varietie of medicines, every one may make choice of that that is moſt agreeable to his taſte, and as much thereof as ſhall bee ſufficient.

## CHAP. VIII.

### *Of local medicines to bee applied outwardly.*

THoſe medicines that have proper and excellent virtues againſt the peſtilence, are not to bee neglected to bee applied outwardly, or carried in the hand. And ſuch are all aromatical, aſtringent, or ſpirituous things, which therefore are endued with virtue to repel the venemous and peſtiferous air from comming and entring into the bodie, and to ſtrengthen the heart and the brain. Of this kinde are *Rue*, Balm, Roſemarie, *Scordium*, *Sage*, Worm-wood, Cloves, Nut-megs, Saffron, the roots of Angelica, and Lovage, and ſuch like, which muſt bee macerated one night in ſharp Vineger and *Aqua vitæ*, and then tied in a knot as big as an egg: or rather let it bee carried in a ſponge made wet, or ſoaked in the ſaid infuſion. For there is nothing that doth ſooner and better hold the ſpirituous virtue and ſtrength of aromatick things, then a ſponge. Wherefore it is of principal uſe either to keep or hold ſweet things to the noſe, or to applie Epithems and Fomentations to the heart.

Of what nature the medicines outwardly uſed ought to bee.

Thoſe

Thoſe ſweet things ought to bee hot or cold, as the ſeaſon of the year, and kinde of the peſtilence is As for example, in the Summer you ought to infuſe and macerate Cinnamon and Cloves, beaten together, with a little Saffron in equal parts, of vineger of Roſes, and Roſe-water, into which you muſt dip a ſponge, which rowled in a fair linnen cloth, you may carrie in your hand, and often ſmell to.

Take of Worm-wood half a handful; ten Cloves, of the roots of *Gentian* and Angelica, of each two drams; of vineger and Roſe-water, of each two ounces; of Treacle and Mithridate, of each one dram; beat and mix them all well together, and let a ſponge bee dipped therein, and uſed as above-ſaid. They may alſo bee encloſed in boxes made of ſweet wood, as of Juniper, Cedar, or Cypreſs, and ſo carried for the ſame purpoſe.

But there is nothing more eaſie to bee carried then Pomanders: the form of which is thus: Take of yellow Sanders, *Mace*, Citron-pills, Roſe and Mirtle-leavs, of each two drams; of Benzoin, *Ladanum*, *Storax*, of each half a dram; of Cinnamon and Saffron, of each two ſcruples; of Camphire and Amber-Greece, of each one ſcuple; of Musk three grains. Make thereof a Pomander, with Roſe-water, with the infuſion of Tragacanth. Or take red-Roſe-leavs, the flowers of Water-lillies and Violets, of each one ounce; of the three Sanders, Coriander-ſeeds, Citron-pills, of each half an ounce; of Camphire, one dram; let them all bee made into powder, and with Water of Roſes and Tragacanth make a pomander. Pomanders.

In the Winter it is to bee made thus. Take of *Storax*, Benzoin, of each one dram and a half; of Musk, half a ſcruple; of Cloves, Lavander and *Ciperus*, of each two drams; of the root of Orris, *i.e. Flower-de-Luce*, and *Calamus aromaticus*, of each two drams and a half; of Amber-Grece, three drams; of Gum-Tragacanth diſſolved in Roſe-water and *aqua vitæ*, as much as ſhall ſuffice: make thereof a Pomander.

And for the ſame purpoſe you may alſo uſe to carrie about with you ſweet powders, made of Amber-Greece, *Storax*, Orris, Nutmegs, Cinnamon, *Mace*, Cloves, Saffron, Benzoin, Musk, Camphire, Roſes, Violets, *Juncus odoratus*, Marjarum and ſuch like, of which beeing mixed together, Powders may may bee compounded and made. Sweet-powders.

Take of the roots of Orris two drams, of *Cyperus*, *Calamus aromaticus*, red Roses, of each half an ounce; of Cloves half a dram, of *Storax*, one dram; of Musk, eight grains: mix them, and make a powder for a bag: or take the roots of Orris two ounces; red-Roſe-leavs, white Sanders, *Storax*, of each one dram; of *Cyperus*, one ounce; of *Calamus aromaticus*, one ounce; of Marjarum, half an ounce; of Cloves, three drams; of Lavander, half a dram; of Coriander-ſeeds, two drams; of good Musk, half a ſcruple; of *Ladanum* and Benzoin, of each a dram; of Nutmegs and Cinnamon, of each two drams: Make thereof a fine powder, and ſow it in a bag.

It will bee verie convenient alſo to applie to the *region* of the heart, a bag filled with yellow Sanders, *Macè*, Cloves, Cinnamon, Saffron and Treacle ſhaken together, and incorporated, and ſprinkled over with ſtrong vineger and Roſe-water in Summer, and with ſtrong wine and Muskadine in the Winter. Bags.

Theſe ſweet Aromatick things thar are ſo full of ſpirits, ſmelling ſweetly and ſtrongly, have admirable virtues to ſtrengthen the principal parts of the bodie, and to ſtir up the expulſive facultie to expel the poiſon.

Contrarie-wiſe, thoſe that are ſtinking and unſavorie, procure a deſire to vomit, & diſſolution of the powers, by which it is manifeſt how fooliſh and abſurd their perſwaſion is, that counſel ſuch as are in a peſtilent conſtitution of the Air, to receiv and take in the ſtinking and unſavorie vapors of *ſinks* and *privies*, and that eſpecially in the morning. Unſavorie things to bee eſchewed.

But it will not ſuffice to carrie thoſe preſervatives alone, without the uſe of anie other thing, but it will bee alſo verie profitable to waſh all the whole bodie in Vineger of the decoction of Juniper and Bay-berries, the Roots of *Gentian*, Marigolds, S. John's-Wurt, and ſuch like, with Treacle or Mithridate alſo diſſolved in it. For vineger is an enemie to all poiſons in general, whether they bee hot or cold: for it reſiſteth and hindereth putrefaction. Neither is it to bee feared, that it ſhould obſtruct the pores, by reaſon of its coldneſs, if the bodie bee bathed in it: for it is of ſubtil parts, and the ſpices boiled in it, have virtue to open.

Whoſoever accounteth it hurtful to waſh his whole bodie therewith, let him waſh onely his arm-holes, the *region* of his heart, his *temples*, groins, parts of generation; as haveing great and marvelous ſympathie with the principal and noble parts.

If anie miſlike batheing, let him annoint himſelf with the following Unguent. Take oil of Roſes, four ounces; oil of Spike, two ounces; of the powder of Cinnamon and Cloves, of each, one ounce and a half; of Benzoin, half an ounce; of Musk, ſix grains; of Treacle, half a dram; of Venice-Turpentine, one dram and a half; of Wax, as much as ſhall ſuffice: make thereof a ſoft Unguent. An Unguent.

You may alſo drop a few drops of oil of Maſtich, of *Sage*, or of Cloves, and ſuch like, into the ears, with a little Civet or Musk.

CHAP.

## CHAP. IX.

*Of other things to bee obſerved for prevention, in fear of the Plague.*

Why Venerie is to bee ſhunned.

VENERIE is chiefly to bee eſchewed, for by it the powers are debilitated, the ſpirits diſſipated, and the breathing places of the bodie diminiſhed, and laſtly, all the ſtrength of nature weakned. A ſedentarie life is to bee ſhunned, as alſo exceſs in diet, for hence proceed's obſtruction, the corruption of the juices, and preparation of the bodie to putrefaction and the peſtilence.

Running ulcers good in time of peſtilence.

Women muſt bee verie careful that they have their courſes duely, for ſtopping beſides the cuſtom, they eaſily acquire corruption, and draw by contagion the reſt of the humors into their ſocietie. Such as have fiſtulous, or otherwiſe old ulcers, muſt not heal them up in a peſtilent ſeaſon; for it is then more convenient rather to make new ones and theſe in convenient and declineing places; that as by theſe channels, the ſink of the humors of the bodie may bee emptied.

The Hemorhoids, bleedings, and other the like accuſtomed evacuations, muſt not bee ſtopped, unleſs they exceed meaſure. Moreover, they muſt at ſuch times take heed that they touch or handle not anie of theſe things wherein the ſeeds or fuell of the peſtilence may lie hid; ſuch as are hemp, flax, quilts and coverings wherein ſuch as have had the Plague have laid; skins and all lether-things, hangings and cloaths. You muſt dwell far from Church-yards, eſpecially from thoſe wherein the corps of ſuch as have died of the Plague are not buried dead in the ground, as in the Church of *Innocents* in *Paris*, in which place by the ſame reaſon it ſundrie times happen's that the bodies are plucked up, rent and torn by dogs. Alſo let them dwell far from places of execution, ſhambles of fleſh and fiſh, from tan-houſes, diars, tallow-chandlers, cloth-dreſſers, farriers, skinners, and from the places wherein metals are are caſt or wrought. The filth and dung, eſpecially of Swine, Privies, ſtanding and muddie waters, and laſtly all things of the like evil ſmell, muſt bee far remote from your habitation; the bellie muſt not bee emptied into thoſe places, into which the excrements of ſuch as have the plague are caſt. The companie of ſuch as uſually viſite thoſe ſick of the plague, muſt bee eſchewed, as of Phyſicians, Apothecaries, Surgeons, Nurſ-Keepers, Grave-makers and Bearers. For though they have not the Plague, yet comming out of a peſtilent place, they may carrie with them lying in their garments, the ſeeds thereof. You may gather this by ſuch have for a little while ſtaied in a perfumer's ſhop, for the perfume diffuſed in the air, beſtow's the ſmell upon the garments of ſuch perſons, ſo that gon from thence, ſuch as meet them, will judg them to carrie perfumes with them. They ſhall alſo ſhun long watchings ſound ſleeping, all paſſions of the minde, eſpecially anger, hunger, thirſt, journying in the Sun, for that hath oftimes occaſioned a diarie fever, which hath not ſeldom been ſeen to turn into a peſtilent one; for by dilateing the pore of the skin, they have given entrance to the peſtilent air, which by that means hath eaſily taken hold of the humor diſpoſed to putrefaction.

Places to bee ſhunned in time of plague.

What companie to bee avoided.

You muſt do nothing in a peſtilent ſeaſon whereby you may grow too hot.

## CHAP. X.

*Of the Office of Magiſtrates in the time of the Plague.*

MAgiſtrates ought to have a ſpecial care that no filth bee heaped up, either in private or publick places: let all things bee kept neat in everie houſ, and let all the ſtreets bee kept clean, the dung and filth bee carried forth of the Cittie, as alſo the dead carcaſſes of killed dogs & cats, for becauſ they oftimes lick and devour the excrements of ſuch as have the Sickneſs, therefore they may by their familiar entrie into ſound houſes, there propagate the Plague. Wherefore they muſt either bee drive'n forth of the Citie, or killed, and ſo bee carried forth and buried deep in the ground. Wells, ſprings, and rivers themſelvs, muſt bee free'd and cleanſed from all impuritie. Care muſt bee had that muſtie corn, tainted fleſh, nor ſtinking fiſh bee not ſet to ſale. Publick baths and hot-houſes muſt bee prohibited, for that in theſe, men's bodies are weakned, and made more yeelding and pervious to the peſtiferous air. They ſhall commit the cure of ſuch as have the Plague, to learned, skilful and honeſt Phyſicians and Apothecaries and Surgeons.

Why dogs and cats muſt bee killed in a Plague-time.

Why Baths and hot-houſes are not then to bee allowed.

Such as are known to have the Plague, ſhall bee ſeparated from ſuch as are free there-from, and bee ſent to ſuch fit places as ſhall bee provided for them; for this is better and more humanely don then to ſhut up everie man in his own houſ. They ſhall provide and fore-ſee that the houſhold-ſtuff of ſuch as have the Plague bee not ſet to ſale. They ſhall ſet ſigns and noted marks upon the houſes ſeazed upon by this diſeaſ, leſt they ſhould unawares run into danger. Wherefore to the ſame purpoſe they ſhall procure that the Surgeons and others that viſit the ſick of the Plague may bee known by ſom conſpicuous mark, that ſuch as paſs by them may bee admoniſhed of the danger; they ſhall alſo take care that the bodies of the

the dead bee buried as ſpeedily as may bee. For they ſooner and more grievouſly putrefie in a ſhort time, then the bodies of others of what death ſoever they die. Wherefore, neither birds, nor ravenous beaſts dare once touch their bodies, though unburied; for by taſteing them they ſhould quickly com to their deaths. The keepers of the gates of the Cittie ſhall bee admoniſhed, that they take ſpecial care that ſuch as are infected, or com from a viſited place, do not enter into the Cittie; for from one, the evil may com to ſpread it ſelf further; for one ſpark may ſet a whole Cittie on fire, and one ſcabbie ſheep infect a whole flock. And becauſ there is nothing which may more perfectly purge the air, and cleanſ it from all manner of noiſomneſs and infection, then fire; they ſhall command that there bee kindled, and perpetually kept burning-fires, made with odoriferous and ſtrong-ſmelling things, as Juniper, Turpentine, Broom, and the like.

Such as die of the Plague do quickly putrefie.

In ſtead hereof *Levinus* tell's, that the Souldiers of the Garriſon of Tornie uſed in a Plague-time to diſcharge their Canons laded onely with powder, turning their mouths upon the Cittie, and that morning and evening; that by the vehemencie of the mooved air, the peſtiferous fogs might bee chaſed away; and by the heat of the burned powder, the venenate and noiſom qualitie of the air might bee amended. Laſtly, I judg it fit to admoniſh Magiſtrates, that they have their eies and mindes attentive upon a murderous and impious kinde of Bearers and Nurſ-keepers; which allured with a deſire of gain (which whil'ſt the Plague reign's, they get abundantly) annoint the walls, doors, threſholds, knockers of gates and locks with the filth and ointments taken from ſuch as have the Plague, that the Plague within a while after ſeizing upon theſe alſo, the maſters of them flying away, and the familie diſperſed, they may there reign alone, and freely and without puniſhment carrie thence what they pleaſ; oftimes ſtrangling ſuch as lie readie to die, leſt recovering, they might bee their accuſers. This I remember happened at *Lions*, *Anno Dom.* 1565.

*Lib. 2. de occult. nat. mirac.*

The villanie of ſom baſe people.

## CHAP. XI.

*What caution muſt bee uſed in chuſing Phyſicians, Apothecaries and Surgeons, who may have care of ſuch as are taken with the Plague.*

IT is the part of Magiſtrates in the ſo great neceſſitie of the afflicted Commonwealth, to appoint learned, skilful, and honeſt Phyſicians, Surgeons, and Apothecaries, and ſuch as have more regard to the Law of God then to gain, to have the care and cure of ſuch as are viſited. But principally let them not take Surgeons and Apothecaries called by proclamation with ſound of trumpet, that if they will take this charge, they ſhall becom free without examination or reward. But let them rather bee allured by gifts and honeſt rewards, not onely then when as neceſſitie urgeth; but alſo after the Plague is over. For ſuch ſervant-Surgeons and Apothecaries as are called by proclamation, ſo to gain freedom, are moſt commonly unskilful and unexperienced Dunces; who, conſcious of their own ignorance, and fearing to undergo the examination of the Maſters of their Companies, refuſe no hazard, however dangerous, with deſire to obtain their freedom.

It is far worſ and more dangerous to fall into the hands of ſuch, then into the hands of theevs and murderers; for theſe, by providence or ſtrength, wee may chance to eſcape; but wee ſeek for and embrace the other, and haveing found them, lay our throats bare unto them, ſo by their unskilfulneſs to bee butchered. Certainly by the fault of the times, and the neglect of Magiſtrates, it is almoſt com to this paſs, that if anie honeſt and learned Phyſicians and Surgeons ſhall undertake this cure, they are commonly forced thereto by the Magiſtrate for fear of baniſhment or fineing. Therefore becauſ they do it againſt their wills, they ſhew themſelvs leſs vigilant, cheerful and painful about the ſick. They com unwillingly, and compelled hereto, becauſ by the memorie of the fore-paſt time, they ſufficiently know, how ſordid and baſely Magiſtrates, when the Plague hath been over-paſt, have been in paying the promiſed reward to men of their condition, who have ſtoutly run into danger; for thence it happen's, that dureing the reſt of their lives, they may ſit idle at home, for that they are infamous, and feared by the people onely for this, that a while agon they viſited ſuch as had the Plague. Therefore I would have Magiſtrates prudent, faithful, and free in chuſeing honeſt, learned and skilful men, who may undergo this ſo difficult and dangerous a charge.

## CHAP. XII.

*How ſuch as undertake the cure of the Plague ought to arm themſelvs.*

FIrſt they muſt think and hold for certain, that they are not called to this office by men, but by God, ſo directing the counſels and actions of men as hee thinketh fit. Therefore they ſhall confidently enter into the cure thereof, for that our lot, life and death

Our lots are in the hands of the Lord.

are in the hands of the Lord: but notwithstanding they ought not to neglect remedies, which are given to men for prevention, lest by neglecting the gifts of God, they may seem to neglect him also that is the giver of so manie good and excellent benefits. Therefore first let them by purgeing and bleeding evacuate the humors subject to putrefaction, and to conceiv the seeds of the pestilence. Let them make two fontanella's by application of cauteries, to bee as rivelets to evacuate the excrementitious humors which are daily by little and little heaped up in us; let one of them bee in the right arm a little below the muscle *Pomis*; the other the space of three fingers under the knee on the in-side of the left leg. This is found by experience a verie certain means of prevention. Let them wash their whole bodies with the following lotion. ℞. *aquæ rosaceti rosati, aut sambucini, vini albi aut malvatici, an.* ℔vi. *rad.enulæ camp.angelicæ, gentian.bistortæ, zedoar.an.* ℥iii. *baccar.juniperi, & hederæ, an.* ℥ii. *salviæ, roris mar.absinth.rutæ, an.*m.i. *corticis citri,* ℥ß. *theriacæ & mithridat. an.* ℥i. *conquassanda conquassent, bulliant lento igni, & serventur ad usum antè commemoratum.* The epithems, unguents and bags formerly described shall bee applied to the region of the heart. I have read it noted by *John Baptist Theodosius*, that amongst other things, Arsenick may bee profitably applied to the region of the heart, that so it may by little and little accustom it self to poisons, that afterwards it may bee less harmed by their incursion, first makeing their assault upon it.

Where to make issues in the time of the Plague.

*Cap.*8.

*Epist.*2.

What to wear.

Let their garments bee made of Chamelet, Dutch-Sarge, Satin, Taffatie, or the like. Or elsif they cannot of these, let them bee of som other handsom Stuff, but not of Cloth, Freez, or the like, that they may take the venenate air, and carrie it with them to the infection of the sound. They shall oftimes change their cloaths, shirts and other linnen, and perfume them with aromatick things; let them warily approach to the sick, more warily speak unto him, with their faces looking away from him, rather then towards him, so that they may not receiv the breath of his mouth, neither the vapor nor smell of anie of his excrements.

How to visit your patients.

An historie.

When as I upon a time beeing called to visit one that lay sick of the Plague, came too near and heedlesly to him, and presently by sudden casting off the cloaths, laid him bare, that so I might the better view a *Bubo*, that hee had in his right groin, and two Carbuncles that were on his bellie, then presently a thick, filthie and putrid vapor arising from the broken abscess of the Carbuncle, as out of a raked puddle, ascended by my nostrils to my brain, whereupon I fainted, and fell down senseless upon the ground; raised up a little after, all things seemed to mee to run round; and I was readie to fall again, but that I staied my self by takeing hold of the bed-post. But one thing comforted mee, that there appeared no signs that my heart was affected, either by pain or panting, or the strong and contumacious failing of my powers. An argument that the animal spirits were onely dissipated by a venenate vapor, and that the substance of the heart was no way wronged, was a sneesing which took mee so violently, that I sneesed ten times, and then fell a bleeding at the nose; which excretion, I believ, free'd mee from all the impression of the malignitie. Let others, warned by this mine example, learn to bee wiser and more warie in this case, lest they com to a worse mishap then befel mee.

## CHAP. XIII.

### *Of the signs of such as are infected with the Plague.*

Whence certain signs of the Plague may bee taken.

WEe must not stay so long before wee pronounce one to have the Plague, until there bee pain and a tumor under his arm-holes, or in his groin, or spots (vulgarly called *Tokens*) appear over all the bodie, or carbuncles arise: for manie die through the venenate malignitie, before these signs appear. Wherefore the chiefest and truest signs of this disease are to bee taken from the heart, beeing the mansion of life, which chiefly and first of all is wont to bee assailed by the force of the poison. Therefore they that are infected with the Pestilence, are vexed with often swoundings and fainting; their pulse is feebler and slower then other, but somtimes more frequent, but that is specially in the night-season; they feel prickings over all their bodie, as if it were the pricking of needles; but their nostrils do itch especially by occasion of the malign vapors riseing upwards from the lower and inner, into the upper parts, their breast burneth, their heart beateth with pain under the left dug, difficultie of takeing breath, ptisick, cough, pain of the heart, and such an elation or puffing up of the *Hypocondria*, or sides of the bellie, distended with the abundance of vapors raised by the force of the feverish heat, that the patient will in a manner seem to have the Tympanie. They are molested with a desire to vomit, and oftentimes with much and painful vomiting, wherein green and black matter is seen, and alwaies of divers colors, answering in proportion to the excrements of the lower parts, the stomach beeing drawn into a consent with the heart, by reason of the vicinitie and communion of the vessels; oftentimes blood alone, and that pure, is excluded and cast up in vomiting; and is not onely cast up by vomiting out of the stomach, but also verie often out of the nostrils, fundament; and in women, out of the womb; the inward parts are often burned,

The cause of vomiting in such as have the plague.

burned, and the outward parts are ſtiff with cold, the whole heat of the patient beeing drawn violently inward, after the manner of a Cupping-glaſs, by the ſtrong burning of the inner parts; then the eie-lids wax blew, as it were through ſom contuſion, all the whole face hath an horrid aſpect, and as it were the color of lead, the eies are burning red, and as it were ſwoln, or puffed up with blood, or anie other humor, ſhed tears; and to conclude, the whole habit of the bodie is ſomwhat changed, and turned yellow. Their looks are ſuddenly changed.

Manie have a burning fever, which doth ſhew its ſelf by the patient's ulcerated jaws, unquenchable thirſt, drineſs and blackneſs of the tongue, and it cauſſeth ſuch a phrenſie by inflameing the brain, that the patients, running naked out of their beds, ſeek to throw themſelvs out of windows into the pits and rivers that are at hand. In ſom the joints of the bodie are ſo weakned, that they cannot go nor ſtand; from the beginning they are as it were buried in a long ſwound and deep ſleep, by reaſon that the fever ſendeth up to the brain the groſs vapors from the crude and cold humors, as it were from green wood newly kindled to make a fire. Why ſom that are taken with the plague are ſleepie.

Such ſleeping doth hold him eſpecially while the matter of the ſore or carbuncle is drawn together, and beginneth to com to ſuppuration. Oftentimes when they are awaked out of ſleep, there do ſpots and marks appear diſperſed over the skin, with a ſtinking ſweat. But if thoſe vapors bee ſharp that are ſtirred up unto the head, in ſtead of ſleep they cauſ great wakeing, and alwaies there is much diverſitie of accidents in the urine of thoſe that are infected with the Plague, by reaſon of the divers temperature and condition of bodies: neither is the urine at all times, and in all men of the ſame conſiſtence and color: For ſomtimes they are like unto the urine of thoſe that are ſound and in health, that is to ſay, laudable in color and ſubſtance; becauſ that when the heart is affected by the venemous air, that entreth in unto it, the ſpirits are more greatly grieved and moleſted then the humors: but thoſe, *i.e.* the ſpirits, are infected and corrupted when theſe do begin to corrupt. Why their urines are like thoſe that are ſound.

But Urines onely ſhew the diſpoſitions of the humors or parts in which they are made, collected together, and through which they paſs.

This reaſon ſeemeth truer to mee then theirs which ſay, that nature terrified with the malignities of the poiſon avoid's contention, and doth not reſiſt or labor to digeſt the matter that cauſſeth the diſeaſ.

Manie have their appetites ſo overthrown, that they can abſtain from meat for the ſpace of three daies together.

And to conclude, the varietie of accidents is almoſt infinite, which appear and ſpring up in this kinde of diſeaſ, by reaſon of the diverſitie of the poiſon, and condition of the bodies and grieved parts: but they do not all appear in each man; but ſom in one, and ſom in another.

## CHAP. XIV.

### *What ſigns in the Plague are mortal.*

IT is a moſt deadlie ſign in the Peſtilence, to have a continual and burning fever, to have the tongue drie, rough, and black, to breathe with difficultie, and to draw in a great quantitie of breath, but breathe out little; to talk idlely; to have phrenſie and madneſs together, with unquenchable thirſt and great watching; to have convulſions, the hicket, heart-beating, and to ſwound verie often and vehemently: further, toſſing and turning in the bed, with a loathing of meats, and dailie vomits of a green, black, and bloodie color; and the face pale, black, of an horrid and cruel aſpect, bedewed with a cold ſweat, and verie mortal ſigns.

There are ſom which at the verie beginning have ulcerous and painful wearineſs, pricking under the skin, with great torment of pain; the eies look cruelly and ſtareingly, the voice waxeth hoarſ, the tongue rough and ſtutting, and the underſtanding decaying; the patient uttereth and talketh of frivolous things. Truly thoſe are verie dangerouſly ſick, no otherwiſe then thoſe whoſe urine is pale, black, and troubled like unto the urine of carriage-beaſts, or lee, with divers colored clouds or contents; as blew, green, black, fattie and oilie, as alſo reſembling in ſhew a Spiders web, with a round bodie ſwimming on the top. An ulcerous and painful wearineſs from the beginning ſheweth the Plague to bee deadlie.

If the fleſh of the carbuncle bee drie and black, as it were ſeared with an hot iron, if the fleſh about it bee black and blew, if the matter do flow back, and turn in, if they have a lask with greatly ſtinking, liquid, thin, clammie, black, green or blewiſh ordure; if they avoid worms, by reaſon of the great corruption of the humors, and yet for all this the patient is never the better; if the eies wax often dim, if the noſtrils bee contracted or drawn together, if they have a grievous cramp, the mouth bee drawn aſide, the muſcles of the face beeing drawn or contracted equally or unequally; if the nails bee black; if they bee often troubled

with the Hicket, or have a Convulſion and reſolution over all the bodie, then you may certainly prognoſticate that death is at hand, and you may uſe cordial medicines onely, but it is too late to purge, or let blood.

## CHAP. XV.

*Signs of the Plague comming by contagion of the air without anie fault of the humors.*

YOu ſhall underſtand, that the Peſtilence proceed's from the corruption of the air, if it bee verie contagious, and diſperſeth it ſelf into ſundrie places in a moment. If it kill quickly and manie, ſo that whil'ſt ſundrie perſons go about their uſual buſineſs, walk in the places of common reſort, and through the ſtreets, they ſuddenly fall down and die, no ſign of the diſeaſ or harm appearing, nor anie pain oppreſſing them; for the malignitie of the corrupt air is quick and verie ſpeedie in infecting our ſpirits, overthrowing the ſtrength of the heart, and killing the patient. The patients are not troubled with great agitation, becauſ the ſpirits diſſipated by the rapid malignitie of the poiſon, cannot endure that labor; beſides they are taken with frequent ſwoundings, few of them have Bubo's, few have Blains com forth; and by the ſame reaſon their urines are like to thoſe of ſound men.

Why they have no ſores.

## CHAP. XVI.

*Signs of the Plague drawn into the bodie by the fault and putrefaction of humors.*

FOrmerly wee have reckoned up the cauſſes of the corruption of humors from plenitude, obſtruction, diſtemper, and the ill juice of meats. Now muſt wee deliver the ſigns of each corrupt humor which reign's in us, that it may bee reduced to ſoundneſs and perfection of nature by the oppoſition of its contrarie, or elſ bee evacuated by phyſick. Therefore if the bodie bee more yellow then uſual, it is a ſign of choler offending in quantitie and qualitie. If more black, then of melancholie; if more pale, then of phlegm; if more red, with the veins ſwoln up and full, then of blood. Alſo the color of the riſeing blains, tumors and ſpots, expreſs the color of the predominant humor, as alſo the excrements caſt forth by ſ[illegible]mit, ſtool and otherwiſe; the heavineſs and cheerfulneſs of the affected bodie; the manne[illegible]r of the preſent fever; the time of the year, age, region, diet. Such things as have a cutting, penetrateing, attenuateing, and cleanſing facultie, take away obſtruction. By means of obſtruction fevers oftimes accompanie the Plague, and theſe not onely continual, but alſo intermitting, like tertians or quartanes. Therefore that Plague that is fixed in the infection or corruption of a cholerick humor, ſhew's it ſelf by the fore-mentioned ſigns of predominateing choler, to wit, the heat of the skin, blains, and excrements, as alſo in the quickneſs of killing, and vehemencie of the ſymptoms, bitterneſs of the mouth, a painful and continual endeavour of going to ſtool, by reaſon of the acrimonie of choler ſtimulateing and rakeing the guts in the paſſage forth. That which reſide's in the corrupt ſubſtance of groſs humors, as of blood, ſheweth it ſelf by manie and plentiful ſweats, by a ſcouring, by which are avoided manie and various humors; and oftimes alſo bloodie matter that proceed's from corrupt phlegm, it invade's with more ſound ſleep, and cauſleſs wearineſs of all the members; when they are awakened out of their ſleep, they are not ſeldom troubled with a trembling over all their joints, the entrance and way of the ſpirits into the members beeing obſtructed by the groſneſs of the humors. That which is ſeated in the corruption of a melancholick humor, is accompanied with heavineſs and pain of the head, much penſiveneſs, a deep and ſmall pulſ. But the moſt certain ſign of the Plague reſideing in the corruption of the humors, is to bee taken from the urine. For the ſigns of the vitiated humors cannot but ſhew themſelvs in the urines: therefore troubled urines, and ſuch as are like thoſe of carriage-beaſts, as alſo black and green, give certain notice thereof. But ſom are much troubled with thirſt, others not at all; becauſ choler or phlegm ſomtimes onely putrefie in the ſtomach or orifice of the ventricle; ſomtimes beſides they will weaken the govermment of the natural faculties of the part, as of the appetite. But if the fever happen by the default and infection both of the air and humors; then will there bee a great confuſion of the fore-mentioned ſigns and ſymptoms.

Signs of choler.

When the urine is to bee looked upon.

Why ſom are much troubled with thirſt, others not at all.

CHAP.

## CHAP. XVII.

*Of the Prognostication that is to bee instituted in the Plague.*

YOU may well fore-tell the future motions and events of diseases, when you throughly know the nature of the disease, and accidents thereof, and the condition, function, and excellencie of the bodie and grieved parts: Although that this may bee spoken in general, That there is no certain prediction in pestilent diseases, either to health or death, for they have verie unconstant motions, somtimes swift and quick, somtimes slow, and somtimes choaking or suffocateing in a moment, while one breath's in the venemous air, as hee is going about anie of his necessarie affairs, haveing pustles riseing in the skin with sharp pain, and as though the whole bodie were pricked all over with needles, or the stings of Bees. Which I have seen with mine eies in the Plague that was at *Lions* when *Charls* the French King lay there. It manie times commeth to pass that the accidents that were verie vehement and rageing a little before, are suddenly asswaged, and the patients do think themselvs better, or almost perfectly sound. Which happen's to *Marie* one of the Queen-Mother her maids, in that notable pestilent constitution of the Air, that yeas when *Charls* the French-King lay at the Castle of *Rossilion*: For when shee was infected, a great tumor or *Bubo* arose in her groin, and suddenly it went in again, so that the third day of her sickness, shee said shee was without anie grief or disease at all, but that shee was troubled with the difficultie of makeing water; and I think it was becaus the the bladder was enflamed by the reflux of the matter; but shee was sound in minde and bodie, and walked up and down the chamber on the same day that shee died. The strangeness of which thing made the King so fearful, that hee hasted to depart thence.

No certain prediction in the Plague.

An historie.

Although this disease doth spare no man of what age, temperature, complexion, diet and condition soever, yet it assaulteth young men that are cholerick and sanguine, more often then old men that are cold and drie, in whom the moisture that is the nourisher of putrefaction by reason of their age is consumed, and the waies, passages and pores of the skin, whereby the venemous air should enter and pierce in, are more strait and narrow. And moreover, becaus old men do alwaies stay at home, but young men for their necessarie business, and also for their delight and pleasure, are alwaies more abroad in the day-time, in the air, wherehence the pollution of the pestilence commeth more often.

Why young men sooner take the Plague then old.

That pestilence that com's by the corruption of the humors, is not so contagious as that which commeth by the default of the air. But those that are phlegmatick and melancholick, are most commonly grieved with that kinde of pestilence; becaus in them the humors are more clammie and gross, and their bodies more cold and less perspirable, for which causes the humors sooner and more speedily putrefie.

What Plague most contagious.

Men that are of an ill juice are also most apt to this kinde of pestilence, for in the naughtie qualitie of the juice there is a great preparation of the humors unto putrefaction: You may know it by this, that when the pestilence reigneth, there are no other diseases among the common people, which have their original of anie ill juice, but they all degenerate into the Plague. Therefore when they begin to appear and wander up and down, it is a token that the pestilence will shortly ceas, or is almost at an end.

But here also I would have you to unerstand those to bee of an ill juice, which have no pores in their skin, by which, as it were by rivers, the evil juice which is contrarie to nature, may bee evacuated and purged. And I have noted and observed, that those are less in danger of the pestilence which have cancerous ulcers and stinking sores in their noses, and such as infected with the French Pocks, have by reason thereof, tumors and rotten ulcers, or have the King's-evil running upon them, the Leprosie or the Scab: and to conclude, all those that have fistula's and running in their bodies.

Who least subject to take the Plague.

I think those that have quartane Fevers are the better priviledged for the same, becaus that by the *Fit* causing sweat, that commeth everie fourth daie, they avoid much of the evil juice that was engendred.

This is more like to bee true, then to think that the poison that commeth from without, may bee driv'n away by that which lurketh within.

Contrariwise, women that are great with childe, as I have noted, becaus they have much ill juice, beeing prohibited from their accustomed evacuations, are verie apt to take this disease, and so seldom recover after the are infected.

Who subject thereto.

Black or blew impostumes, and spots and pustles of the same color, dispersed over the skin, argue that the disease is altogether incureable and mortal.

Signs the disease is incureable.

When the swelling or sore goeth or commeth before the Fever, it is a good sign; for it declareth that the malignitie is verie weak and feeble, and that nature hath overcom it, which of it self is able to drive so great portion thereof from the inner parts. But if the sore or tumor com after the Fever, it is a mortal and deadlie sign, for it is certain that it commeth of the venemous matter not translated, but dispersed; not by the victorie of nature, but through the

A good sign.

A deadlie sign.

the multitude of the matter, with the weight whereof nature is overcom.

When the Moon decreaſeth, thoſe that are infected with the Peſtilence are in great doubt and danger of death, becauſ then the humors that were collected and gathered together before the Full of the Moon, through delay and abundance, do ſwell the more, and the faculties by which the bodie is governed, becom more weak and feeble, becauſ of the imbecillitie of the native heat, which before was nouriſhed and augmented by the light, and ſo conſequently by the heat of the full-Moon: For as it is noted by *Ariſtotle*, the wainings of the Moon are more cold and weak: and thence it is that women have their menſtrual fluxes chiefly or moſt commonly at that time.

In what air moſt contagious.

In a groſs and cloudie Air the peſtilent infection is leſs vehement and contagious then in a thin and ſubtil Air; whether that thinneſs of the Air proceed from the heat of the Sun, or from the North winde and cold. Therefore at *Paris*, where naturally; and alſo through the abundance of filth that is about the Citie, the Air is dark and groſs, the peſtilent infection is leſs fierce and contagious then it is in *Province*, for the ſubtiltie of the Air ſtimulates or helps forward the Plague.

But this diſeaſ is mortal and pernicious whereſoever it bee, becauſ it ſuddenly aſſaulteth the heart, which is the Manſion, or as it were the fortreſs or caſtle of life: but commonly not before the ſigns and tokens of it appear on the bodie: and yet you ſhall ſcarce finde anie man that thinketh of calling the Phyſician to help to preſerv him from ſo great danger before the ſigns thereof bee evident to bee ſeen and felt: but then the heart is aſſaulted: And when the heart is ſo aſſaulted, what hope of life is there, or health to bee looked for.

What effects fear and confidence produce in the Plague.

Therefore becauſ medicines com' oft-times too late, and this maladie is as it were a ſudden and winged meſſenger of our death, is commeth to paſs that ſo manie die thereof. And moreover, becauſ of the firſt ſuſpicion of this ſo dire and cruel a diſeaſ, the imagination and minde (whoſe force in the diverſly much ſtirring up of the humors is great & almoſt incredible) is ſo troubled with fear of imminent death, and deſpair of health, that together with the perturbed humors, all the ſtrength and power of nature falleth and ſinketh down.

This you may perceiv and know, by reaſon that the keepers of ſuch as are ſick, and the bearers which are not fearfull, but verie confident, although they do all the baſeſt offices which may bee for the ſick, are commonly not infected, and ſeldom die thereof if infected.

## CHAP. XVIII.

*How a peſtilent fever com's to bee bred in us.*

THe Plague oft-times findeth fuel in our bodies, and oftimes allurements, to wit the putrefaction of humors, or aptneſs to putrefie: but it never thence hath its firſt originall, for that com's alwaies from the defiled air; therefore a peſtilent fever is thus bred in us: The peſtilent Air drawn by inſpiration into the lungs and tranſpiration into the utmoſt mouths of the veines and arteries ſpread over the skin, the blood or elſ the humors alreadie putrefying or apt to putrefie therein, are infected and turned into a certain kinde of malignitie reſembling the nature of the agent. Theſe humors, like unquench't lime when it is firſt ſprinkled with water, ſend forth a putrid vapor, which carried to the principal parts and heart eſpecially, infecteth the ſpirituous blood boiling in the ventricles thereof, and therewith alſo the vitall ſpirits; and hence proceed's a certain feveriſh heat. This heat diffuſed over the bodie by the arteries, together with a malign qualitie, taint's all, even the ſolid parts of the bones with the peſtiferous venom; and, beſides, cauſeth divers ſymptoms, according to the nature thereof, and the condition of the bodie and the humors wherein it is. Then is the conflict of the malignitie aſſailing, and nature defending, manifeſt; in which if nature prevail, it, uſing the help of the expulſive facultie, will ſend and drive it far from the noble parts, either by ſweats, vomits, bleeding, evacuation by ſtool or urine, buboes, carbuncles, puſtles, ſpots, and other ſuch kindes of breakings out over the skin. But on the contrarie, if the malignitie prevail, and nature bee too weak, and yeeld, and that firſt hee bee troubled with often panting or palpitation of the heart; then preſently after with frequent faintings, the patient then at length will die. For this is a great ſign of the Plague or a peſtilent fever, if preſently at the firſt, with no labor, nor anie evacuation worth the ſpeaking of, their ſtrength fail them, and they becom exceeding faint. You may finde the other ſigns mentioned in our preceding diſcourſ.

The original of the Plague alwaies from the Air.

Signs that nature is orecom.

CHAP.

## CHAP. XIX.

*Into what place the Patient ought to betake himſelf ſo ſoon as hee finde's himſelf infected.*

WEe have ſaid that the perpetual and firſt original of the peſtilence commeth of the Air, therefore ſo ſoon as one is blaſted with the peſtiferous Air, after hee hath taken ſom preſervative againſt the malignitie thereof, hee muſt withdraw himſelf into ſom wholeſom Air, that is, clean and pure from any venemous infection or contagion; for there is great hope of health by the alteration of the Air; for wee do moſt frequently and abundantly draw in the Air of all things, ſo that wee cannot want it for a minute of time: therefore of the Air that is drawn in dependeth the correction, amendment, or increaſ of the poiſon or malignitie that is received, as the Air is pure, fincere, or corrupted. Change of the Air conduceth to the cure of the Plague.

There bee ſom that do think it good to ſhut the patient in a cloſe chamber, ſhutting the windows to prohibit the entrance of the Air as much as they are able: But I think it more convenient that thoſe windows ſhould bee open from whence that winde bloweth that is directly contrarie unto that which brought in the venemous Air: For although there bee no other cauſ, yet if the Air bee not mooved, or agitated, but ſhut up in a cloſe place, it will ſoon bee corrupted. Therefore in a cloſe and quiet place that is not ſubject to the entrance of the Air, I would wiſh the Patient to make winde, or to procure Air with a thick and great cloth dipped or macerated in water and vineger mixed together, and tied to a long ſtaff, that by toſſing it up and down the cloſe chamber, the winde or air thereof may cool and recreate the Patient. The Patient muſt everie daie bee carried into a freſh chamber, and the beds and the linnen cloaths muſt bee changed: there muſt alwaies bee a clear and bright fire in the patient's chamber, and eſpecially in the night, whereby the air may bee made more pure, clean, and void of nightly vapors, and of the filthie and peſtilent breath proceeding from the Patient, or his excrements. In the mean time, leſt (if it bee in hot weather) the Patient ſhould bee weakned or made more faint by reaſon that the heat of the fire doth diſperſ and waſte his ſpirits, the *floor* or ground of his chamber muſt bee ſprinkled or watered with vineger and water, or ſtrowed with the branches of Vines made moiſt in cold water, with the leavs and flowers of Water-lillies, or Poplar, or ſuch like. In the fervent heat of Summer hee muſt abſtain from Fumigations that do ſmell too ſtrongly, becauſ that by aſſaulting the head, they increaſ the pain. Air pen't up is apt to putrefie.

If the Patient could to that coſt, it were good to hang all the chamber where hee lieth, and alſo the bed, with thick or courſ linnen cloaths moiſtned in vineger and water of Roſes. Thoſe linnen cloaths ought not to bee verie white, but ſomwhat brown, becauſ much and great whiteneſs doth diſperſ the ſight, and by waſteing the ſpirits, doth increaſ the pain of the head: for which cauſ alſo the chamber ought not to bee verie lightſom.

Contrariwiſe, on the night ſeaſon there ought to bee fires and perfumes made, which by their moderate light, may moderately call forth the ſpirits.

Sweet fires may bee made of little peeces of the wood of Juniper, Broom, Aſh, Tamarisk, of the rinde of Oranges, Limmons, Cloves. Benzoin, gum-Arabick, Orris-roots, Myrrh, groſly beaten together, and laid on the burning coals put into a chafing-diſh. Truly the breath or ſmoak of the wood or berries of Juniper, is thought to drive ſerpents a great waie from the place where it is burn't. The virtue of the Aſh-tree againſt venom is ſo great, as *Plinie* teſtifieth, that a ſerpent will not com under the ſhadow thereof, no, not in the morning, nor evening, when the ſhadow of anie thing is moſt great and long, but hee will run from it. I my ſelf have prooved that if a circle or compaſs bee made with the boughs of an Aſh-tree, and a fire made in the mid'ſt thereof, and a ſerpent put within the compaſs of the boughs, that the ſerpent will rather run into the fire then through the Aſh-boughs. The materials for ſweet fires. *Lib. 16. cap. 13.*

There is alſo another means to correct the Air. You may ſprinkle vineger of the decoction of *Rue*, *Sage*, Roſemarie, Bay-berries, Juniper-berries, *Ciperus*-nuts, and ſuch like, on ſtones or bricks red hot, and put in a pot or pan, that all the whole chamber where the patient lieth may bee perfumed with the vapor thereof.

Alſo Fumigations may bee made of ſom matter that is more groſs and clammie, that by the force of the fire the fume may continue the longer, as of *Ladanum*, Myrrh, Maſtich, Roſin, Turpentine, *Storax*, *Olibanum*, Benzoin, Bay-berries, Juniper-berries, Cloves, *Sage*, Roſemarie, and Marjarum, ſtamped together, and ſuch like. Perfumes.

Thoſe that are rich and wealthie may have Candles and Fumes made of wax, or Tallow mixed with ſom ſweet things. Sweet candles.

A ſponge macerated in vineger of Roſes, and Water of the ſame, and a little of the decoction of Cloves, and of Camphire added thereto, ought alwaies to bee readie at the patient's hand, that by often ſmelling unto it, the animal-ſpirits may bee recreated and ſtrengthned.

The water following is verie effectual for this matter. Take of Orris four ounces; of Zedoarie, Spikenard, of eaeh ſix drams; of *Storax*, Benzoin, Cinnamon, Nutmegs, Cloves, A ſweet water to ſmell to.

of

of each one ounce and a half; of old Treacle, half an ounce: bruiſe them into groſs powder, and macerate them for the ſpace of twelv hours in four pound of white and ſtrong wine; then diſtill them in a Limbeck of glaſs on hot aſhes, and in that liquor wet a ſponge, and then let it bee tied in a linnen cloth, or cloſed in a box, and ſo often put into the noſtrils. Or take of the vineger and water of Roſes, of each four ounces; of Camphire, ſix grains; of Treacle, half a dram: let them bee diſſolved together, and put into a vial of glaſs, which the patient may often put into his noſe.

A *Nodula* to ſmell to.

This *Nodula* following is more meet for this matter. Take of Roſe-leavs, two pugils; of Orris, half an ounce; of *Calamus aromaticus*, Cinnamon, Cloves, of each two drams; of Storax and Benzoin, of each one dram and a half; of *Cyperus*, half a dram; beat them into a groſs powder, make thereof a *Nodula* between two peeces of Cambrick or Lawn of the bigneſs of an hand-ball, then let it bee moiſtned in eight ounces of Roſe-water, and two ounces of Roſe-vineger, and let the patient ſmell to it often. Thoſe things muſt bee varied accordrng to the time: For in the Summer you muſt uſe neither Musk nor Civet, nor ſuch like hot things: and moreover women that are ſubject to *fits* of the *Mother*, and thoſe that have Fevers or the head-ach, ought not to uſe thoſe things that are ſo ſtrong ſmelling and hot, but you muſt make choice of things more gentle: Therefore things that are made with a little Camphire and Cloves bruiſed and macerated together in Roſe-water and vineger of Roſes, ſhall bee ſufficient.

## CHAP. XX.

*What Dict ought to bee obſerved, and firſt of the choice of Meat.*

THe order of Diet in a peſtilent diſeaſ ought to bee cooling and drying; not ſlender, but ſomwhat full; Becauſ by this kinde of diſeaſ there commeth waſteing of the ſpirits, and exſolution of the faculties, which inferreth often ſwounding, therefore that loſs muſt bee repaired as ſoon as may bee with more quantitie of meats that are of eaſie concoction and digeſtion. Therefore I never ſaw anie bee-

Why ſuch as have the plague may feed more fully.

ing infected with the peſtilence that kept a ſlender diet, that recovered his health, but died; and few that had a good ſtomach, and fed well, died.

Sweet, groſs, moiſt and clammie meats, and thoſe which are altogether, and exquiſitely of ſubtil parts, are to bee avoided; for the ſweet do eaſily take fire, and are ſoon inflamed; the moiſt will putrefie; the groſs and clammie obſtruct, and therefore engender putrefaction; thoſe meats that are ſubtil parts, over-much attenuate the humors, and inflame them; and do ſtir up hot and ſharp vapors into the brain, whereof commeth a Fever. Therefore wee muſt eſchew Garlick and Onions, Muſtard, ſalted aud ſpiced Meats, and all kinde of Pulſ muſt alſo bee avoided, becauſ they engender groſs windes, which are the autors of obſtruction: but the decoction of them is not alwaies to bee refuſed, becauſ it a provoker of urine.

Pulſ muſt bee ſhunned.

The manner of Dict.

Therefore let this bee their order of diet: let their bread bee of Wheat or Barlie, well wrought, well leavened and ſalted, neither too new, nor too ſtale: let them bee fed with ſuch meat as may bee eaſily concocted and digeſted, and may engender much laudable juice, and verie little excremental, as are the fleſh of Wether-Lambs, Kids, Leverets, Pullets, Partridges, Pigeons, Thruſhes, Larks, Quails, Black-Birds, Turtle-Doves, Moor-Hens, Pheſants, and ſuch like; avoiding water-Fowls. Let the fleſh bee moiſtned in Ver-juice of unripe Grapes, Vineger, or the juice of Limmons, Oranges, Citrons, tart-Pomgranats, Barberries, Gooſ-berries, or red Currance, or of garden and wilde-ſorrel: for all theſe ſowr things are verie wholſom in this kinde of diſeaſ, for they do ſtir up the appetite, reſiſt the venemous qualitie and putrefaction of the humors, reſtrain the heat of the Fever, and prohibit the corruption of the meats in the ſtomach. Although that thoſe that have a more weak ſtomach, and are endued with a more exact ſenſ, and are ſubject to the Cough and diſeaſes of the Lungs, muſt not uſe theſe, unleſs they bee mixed with Sugar and Cinnamon.

If the patient at anie time bee fed with ſodden meats, let the brothes bee made with Lettuce, Purſlain, Succorie, Borage, Sorrel, Hops, Bugloſs: Creſſes, Burnet, Marigolds, Chervil, the cooling Seeds, French-Barlie and Oat-meal, with a little Saffron, for Saffron doth engender manie ſpirits, and reſiſteth poiſon. To theſe opening roots may bee added to avoid obſtruction; yet much broth muſt bee refuſed by reaſon of moiſture. The fruit of Capers eaten at the beginning of the Meal provoke the appetite, and prohibit obſtructions; but they ought not to bee ſeaſoned with over-much oil and ſalt, that they may alſo with good ſucceſs bee put into broths.

Fiſhes are altogether to bee avoided, becauſ they ſoon corrupt in the Stomach: but if the patient bee delighted with them, thoſe that live in ſtonie places muſt bee choſen; that is to ſay, thoſe that live in pure and ſandie water, and about rocks and ſtones, as are Trouts, Pikes, Pearches, Gudgeons and Creviſes boiled in milk, Wilks, and ſuch like. And concerning Sea-fiſh, he may bee fed with Giltheads, Gurnarts, with all the kindes of Cod-fiſh, Whiteings not ſeaſoned with ſalt, and Turbuts.

Eggs

Eggs potched and eaten with the juice of Sorrel, are verie good. Likewiſe Barlie-water ſeaſoned with the grains of a tart Pomgranat ,and if the Fever bee vehement, with the ſeeds of white Poppie. Such barlie-water is eaſie to bee concocted and digeſted,it cleanſeth greatly, and moiſten's and mollifieth the bellie. But in ſom it procure's an appetite to vomit,and pain of the head, and thoſe muſt abſtain from it. But in ſtead of Barlie-water they may uſe pap, and bread crummed in the decoction of a Capon.

For the ſecond courſ, let him have raiſins of the Sun newly ſodden in Roſe-water with Sugar,ſowr Damask-Prunes, tart Cherries, Pippins and Katharine-Pears: For the ſecond courſ.

And in the later end of the *Meal*, Quinces roſted in the embers, Marmalate of Quinces, and *conſervs* of Bugloſs or of Roſes, and ſuch like, may bee taken : or elſ this powder following. In the end of the *Meal*.

Take of Coriander-ſeeds prepared, two drams : of Pearl, Roſe-leavs, ſhaveings of Hartſhorn and Ivorie, of each half a dram; of Amber, two ſcruples; of Cinnamon one ſcruple; of Unicorn's horn, and the bone in a Stagg's heart, of each half a ſcruple; of Sugar of Roſes, four ounces : make thereof a powder, and uſe it after meats.

If the patient bee ſomwhat weak,hee muſt bee fed with Gellie made of the fleſh of a Capon, and Veal ſodden together in the water of Sorrel,*Carduus Benedictus*, with a little quan- of Roſe-vineger, Cinnamon, Sugar, and other ſuch like, as the preſent neceſſitie ſhall ſeem to require.

In the night ſeaſon for all events and miſchances, the patient muſt have readie-prepared broth of meats of good digeſtion,with a little of the juice of Citrons or Pomgranats.

This reſtaurative that followeth may ſerv for all. Take of the *conſerv* of Bugloſs,Borage, Violets, Water-lillie, and Succorie, of each two ounces; of the powder of the Electuarie *Diamargaritum frigidum*,of the Trochiſces of Camphir,of each three drams; of Citron-ſeeds, *Carduus*-ſeeds, Sorrel-ſeeds, the roots of *Dictamnus*, Tormentil,, of each two drams; of the broth of a young Capon,made with Lettuce,Purſlain, Bugloſs and Borage boiled in it, ſix pintes; put them in a Limbeck of glaſs with the fleſh of two Pullets, of ſo manie Partridges, and with fifteen leavs of pure Gold: make thereof a diſtillation over a ſoft fire. Then take of the diſtilled liquor, half a pinte, ſtrain it through a woollen bag, with two ounces of white Sugar, and half a dram of Cinnamon : Let the patient uſe this when hee is thirſtie. Or elſ put the fleſh of one old Capon,and of a leg of Veal, two minced Partridges, and two drams of whole Cinnamon without anie liquor, in a Limbeck of glaſs,well luted and covered, and ſo let them boil in *Balneo Mariæ* unto the perfect concoction. For ſo the fleſhes will bee boiled in their own juice, without anie hurt of the fire; then let the juice bee preſſed out there-hence with a Preſs:give the patient for everie doſe,one ounce of the juice with ſom cordial waters, ſom *Triſantalum*, and *Diamargaritum frigidum*. A reſtaurative drink.

The *preſervs* of ſweet fruits are to bee avoided, becauſ that ſweet things turn into choler but the confection of tart prunes, Cherries, and ſuch like may bee fitly uſed. But becauſ there is no kinde of ſickneſs that ſo weaken's the ſtrength,as the plague; it is alwaies neceſſarie, but yet ſparingly and often, to feed the patient, ſtill haveing reſpect unto his cuſtom, age, the region, and the time : for through emptineſs there is great danger, leſt that the venemous matter that is driv'n out to the ſuperficiall parts of the bodie, ſhould bee called back into the inward parts, by an hungrie ſtomach, and the ſtomach it ſelf ſhould be filled with cholerick, hot, thin, and ſharp excremental humors, whereof commeth biteing of the ſtomach,and gripeings in the guts.

## CHAP. VII.

*What drink the patient infected ought to uſe.*

IF the fever bee great and burning, the patient muſt abſtain from wine, unleſs that hee bee ſubject to ſwounding : and hee may drink the *Oxymel* following in ſtead thereof.

Take of fair water, three quarts; wherein boil four ounces,of honie untill the third part bee conſumed, ſcumming it continually; then ſtrain it, and put it into a clean veſſel, and add thereto four ounces of vineger, and as much cinnamon as will ſuffice to give it a taſt. Or elſ a ſugred water, as followeth. Take two quarts of fair water;of hard ſugar,ſix ounces;of cinnamon,two ounces;ſtrain it through a woollen bag or cloth without anie boiling; and when the patient will uſe it, put thereto a little of the juice of Citrons. The ſyrup of the juice of Citrons excelleth amongſt all others that are uſed againſt the peſtilence. An *Oxymel*.

The uſe of the Julip following is alſo verie wholſom. Take of the juice of Sorrel well clarified,half a pinte;of the juice of Lettuce ſo clarified, four ounces; of the beſt hard ſugar, one pound;boil them together to a perfection;then let them be ſtrained & clarified,adding a little before the end a little vineger,and ſo let it be uſed between meals with boiled water,or with equal portions of the water of Sorrel, Lettuce, Scabious and Bugloſs: or take of this A Julip.

former

mer deſcribed Julip ſtrained and clarified four ounces; let it bee mixed with one pound of the fore-named cordial waters, and boil them together a little. And when they are taken from the fire, put thereto of yellow Sanders one dram; of beaten Cinnamon half a dram; ſtrain it through a cloth: when it is cold, let it bee given the patient to drink with the juice of Citrons.

Thoſe that have been accuſtomed to drink ſider, perrie, beer or ale, ought to uſe that drink ſtill, ſo that it it bee clear, tranſparent, and thin, and made of thoſe fruits that are ſomwhat tart; for troubled and dreggiſh drink doth not onely engender groſs humors, but alſo crudities, windineſs, and obſtructions of the firſt *region* of the bodie, whereof com's a fever.

The commodities of oxycrate.

Oxycrate beeing given in manner following, doth aſſwage the heat of the fever, and repreſs the putrefaction of the humors, and the fierceneſs of the venom, and alſo expelleth the water through the veins, if ſo bee that the patients are not troubled with ſpitting of blood, cough, yexing, and altogether weak of ſtomach: for ſuch muſt avoid tart things.

To whom hurtfull.

Take of fair water, one quart; of white or red vineger three ounces; of fine ſugar, four ounces; of ſyrup of Roſes, two ounces: boil them a little, and then give the patient thereof to drink. Or take of the juice of Limons and Citrons, of each half an ounce; of the juice of ſowr Pomgranats, two ounces; of the water of Sorrel and Roſes, of each an ounce; of fair water boiled, as much as ſhall ſuffice: make thereof a Julip, and uſe it between meals. Or take the ſyrup of Limmons and of red currance, of each one ounce; of the water of lillies, four ounces; of fair water boiled, half a pinte; make thereof a Julip. Or take of the ſyrups of water-Lillies and vineger, of each half and ounce; diſſolv it in five ounces of the water of Sorrel; of fair water one pinte: make thereof a Julip.

The drinking of cold water to whom and when profitable.

But if the patient bee young, and have a ſtrong and good ſtomach, and cholerick by nature, I think it not unmeet for him to drink a full & large draught of fountain-water cold; for that is effectual to reſtrain and quench the heat of the Fever; and contrariwiſe, they that drink cold water often, and a verie ſmall quantitie at a time, as the Smith doth ſprinkle water on the fire at his Forge, do increaſe the heat and burning, and thereby make it endure the longer. Therefore by the judgment of *Celſus*, when the diſeaſ is in the chief increaſ, and the patient hath endured thirſt for the ſpace of three or four daies, cold water muſt bee given unto him in great quantitie, ſo that hee may drink paſt his ſatietie, that when his bellie and ſtomach are filled beyond meaſure, and ſufficiently cooled, hee may vomit.

*Lib. 3. cap. 7.*

Som do not drink ſo much thereof as may cauſ them to vomit, but do drink even unto ſatietie, and ſo uſe it for a cooling medicine; but when either of theſe is don, the patient muſt bee covered with manie cloaths, and ſo placed that hee may ſleep; and for the moſt part after long thirſt and watching, and after long fulneſs, and long, and great heat, ſound ſleep commeth; by which great ſweat is ſent out, and that is a preſent help.

But thirſt muſt ſomtimes bee quenched with little pieces of Melons, Gourds, Cucumbers, with the leav's of Lettuce, Sorrel, and Purſlain, made moiſt or ſoaked in cold water, or with a little ſquare piece of a Citron, Limmon, or Orange macerated in Roſe-water, and ſprinkled with Sugar, and ſo held in the mouth, and then changed.

But if the patient bee aged, his ſtrength weak, flegmatick by nature, and giv'n to wine, when the ſtate of the Fever is ſomwhat paſt, and the chief heat beginning to aſſwage, hee may drink wine verie much allayed at his meat; for to reſtore his ſtrength, and to ſupplie the want of the waſted ſpirits. The patient ought not by anie means to ſuffer great thirſt, but muſt mitigate it by drinking, or elſ allay it by waſhing his mouth with oxycrate and ſuch like; and hee may therein alſo waſh his hands and his face, for that doth recreate the ſtrength. If the flux or lask trouble him, hee may verie well uſe to drink ſteeled water, and alſo boiled milk, wherein manie ſtones comming red hot out of the fire have been manie times quenched. For the drineſs and roughneſs of the mouth, it is verie good to have a cooling, moiſtening & lenifying lotion of the mucilaginous water of the infuſion of the ſeeds of Quinces, *pſilium*, *id eſt*, Flea-wurt, adding thereto a little Camphir, with the Water of Plantain and Roſes; then cleanſ and wipe out the filth, and then moiſten the mouth, by holding therein a little oil of ſweat Almonds mixed with a little ſyrup of Violets. If the roughneſs breed or degenerate into ulcers, they muſt bee touched with the water of the infuſion of *ſublimate*, or *Aqua fortis*.

For drineſs or roughneſs of the mouth.

For the Ulcers thereof.

But becauſ wee have formerly made frequent mention of drinking of water, I have here thought good to ſpeak ſomwhat of the choice and goodneſs of waters. The choice of waters is not to bee neglected, becauſ a great part of our diet depend's thereon; for beſides that wee uſe it either alone, or mixed with wine for drink, wee alſo knead bread, boil meat, and make broths therewith. Manie think that rain-water which falls in ſummer, and is kept in a ciſtern well placed and made, is the wholeſomeſt of all. Then next thereto they judge that ſpring water which run's out of the tops of mountains, through rocks, cliffs & ſtones: in the third place they put Well-water, or that which riſeth from the foots of hils. Alſo the river-water is good that is taken out of the mid'ſt or ſtream. Lake or pond-water is the worſt, eſpecially if it ſtand ſtill for ſuch is fruitfull of and ſtored with manie venemous creatures, as Snakes, Toads, and the like. That which com's by the melting

The choice of waters.

melting of Snow and Ice is verie ill, by reaſon of the too refrigerateing faculties and earthlie nature. But of ſpring and Well-waters theſe are to bee judged the beſt, which are inſipid, without ſmell, and colour; ſuch as are clear, warmiſh in winter, and cold in ſummer, which are quickly hot, and quickly cold, that is, which are moſt light, in which all manner of pulſ, turnips, and the like, are eaſily and quickly boiled. Laſtly, when as ſuch as uſually drink thereof, have clear voices and ſhrill, their cheſts ſound, and a livelie and freſh colour in their faces. *Hip. ſect. 5. apher. 26.*

## CHAP. XXII.

### *Of Antidotes to bee uſed in the Plague.*

NOw wee muſt treat of the proper cure of this diſeaſ, which muſt bee uſed as ſoon as may bee poſſible, becauſ this kinde of poiſon in ſwiftneſs exceedeth the celeritie of the medicine. Therefore it is better to err in this, that you ſhould think everie diſeaſ to bee peſtilent in a peſtilent ſeaſon, and to cure it as the Peſtilence: becauſ that ſo long as the air is polluted with the ſeeds of the Peſtilence, the humors in the bodie are ſoon infected with the vicinitie of ſuch an air, ſo that then there happeneth no diſeaſ void of the Peſtilence, that is to ſay, which is not peſtilent from the beginning by his own nature, or which is not made peſtilent.

Manie begin the cure with blood-letting, ſom with purgeing; and ſom with Antidotes. Wee, takeing a conſideration of the ſubſtance of that part that is aſſaulted, firſt of all begin the cure with an Antidote; becauſ that by its ſpecifick propertie, it defends the heart from poiſon, as much as it is offended therewith. Although there are alſo other Antidotes which preſerv and keep the heart and the patient from the danger of Poiſon and the Peſtilence, not onely becauſ they do infringe the power of the poiſon in their whole ſubſtance, but alſo becauſ they drive and expel it out of all the bodie by ſweat, vomiting, ſcouring, and ſuch other kindes of evacuations. *The beginning of the cure muſt bee by Antidotes.*

The Antidote muſt bee give'n in ſuch a quantitie as may bee ſufficient to overcom the poiſon; but becauſ it is not good to uſe it in greater quantitie then needeth, leſt it ſhould overthrow our nature, for whoſe preſervation onely it is uſed; therefore that which cannot bee taken together at once, muſt bee taken at ſeveral times, that ſom portion thereof may daily bee uſed ſo long, untill all the accidents, effects and impreſſions of the poiſon bee paſt; and that there bee nothing to bee feared. Som of thoſe Antidotes conſiſt of portions of venemous things, beeing tempered together, and mixed in an apt proportion with other medicines, whoſe power is contrarie to the venom: as Treacle, which hath for an ingredient the fleſh of Vipers, that it beeing thereto mixed may ſerv as a guide to bring all the Antidote unto the place where the venenate malignitie hath made the chief impreſſion; becauſ by the ſimilitude of nature and ſympathie, one poiſon is ſuddenly ſnatched and carried into another. There are other abſolutely poiſonous; which nevertheleſs are Antidotes one unto another: as a Scorpion himſelf cureth the pricks of a Scorpion. But Treacle and Mithridate excel all other Antidotes: for by ſtrengthening the nobleſt part, and the manſion of life, they repair and recreate the waſted Spirits, and overcom the poiſon, not onely beeing taken inwardly, but alſo applied outwardly to the *region* of the heart, Botches and Carbuncles: for by an hidden propertie they draw the poiſons unto them, as Amber doth Chaff, and digeſt it when it is drawn, and ſpoil and rob it of all its deadlie force; as it is declared at large by *Galen*, in his book *de Theriacâ ad Piſonem*, by moſt true reaſons and experiments. But you will ſay that theſe things are hot, and that the plague is often accompanied with a burning fever. But thereto I anſwer, there is not ſo great danger in the fever, as in the peſtilence, although in the giveing of Treacle, I would not altogether ſeem to neglect the fever, but think it good to miniſter or applie it mixed with cordial-cooling medicines, as with the Trochiſces of Camphir, ſyrup of Limmons, of water-Lillies, the water of Sorrel, and ſuch like. And for the ſame cauſ wee ought not to chuſe old Treacle, but that which is of a middle age, as of one or two years old: to thoſe that are ſtrong, you may give half a dram; and to thoſe that are more weak, a dram. *In what quantitie they muſt bee taken.* *Why poiſonous things are put into Antidotes.* *Som poiſons Antidotes to other-ſom.*

The patient ought to walk preſently after hee hath taken Treacle, Mithridate, or anie other Antidote; but yet as moderately as hee can: not like unto manie, which when they perceiv themſelvs ro bee infected, do not ceaſ to courſ and run up and down, until they have no ſtrength to ſuſtain their bodies; for ſo they diſſolv nature, ſo that it cannot ſuffice to overcom the contagion. After moderate walking, the patient muſt bee put warm to bed, and covered with manie cloaths, and warm brick-bats or tiles applied to the ſoles of his feet; or in ſtead thereof you may uſe ſwines bladders filled with hot water, and applie them to the groins and arm-holes, to provoke ſweat: for ſweating in this diſeaſ is a moſt excellent remedie, both for to evacuate the humors in the fever, and alſo to drive forth the malignitie in the peſtilence, although everie ſweat bring's not forth the fruit of health. For *George Agricola* *How to walk after the takeing of an Antidote.*

*Agricola* ſaith, that hee ſaw a woman at *Miſnia* in Germanie, that did ſweat ſo for the ſpace of three daies, that the blood came forth at her head and breaſt, and yet nevertheleſs ſhee died.

A ſudorifick potion.

This potion following will provoke ſweat. Take the roots of China ſhaved in thin pieces one ounce and half; of *Guaicum* two ounces; of the bark of Tamarisk one ounce; of Angelica-roots two drams; of the ſhavings of Hartſ-horn one ounce; of Juniper-berries three drams; put them into a vial of glaſs that will contain ſix quarts, put thereto four quarts of running or river-water that is pure and clear, macerate them for the ſpace of one whole night on the aſhes: and in the morning boil them all in *Balneo Mariæ*, untill the half bee conſumed, which will bee don in the ſpace of ſix hours; then let them bee ſtrained through a bag, and then ſtrained again, but let that bee with ſix ounces of ſugar of Roſes, and a little Treacle: let the patient take eight ounces or fewer of that liquor, and it will provoke ſweat.

A ſudorifick powder.

The powder following is alſo verie profitable. Take of the leav's of *Dictamnus*, the roots of Tormentil, Betonie, of each half an ounce; of Bole-Armenick prepared one ounce; of *Terra Sigillata* three drams; of Aloës and Myrrh, of each half a dram; of Saffron one dram; of Maſtich two drams: powder them all according to art, and give one dram thereof diſſolved in Roſe-water, or the water of wilde-ſorrel, and let the patient walk ſo ſoon as hee hath taken that powder; then let him bee laid in his bed to ſweat as I have ſhewed before.

A diſtilled water againſt the Plague.

The water following is greatly commended againſt poiſon. Take the roots of *Gentian* and *Cyperus*, of each three drams; of *Carduus benedictus*, Burnet, of each one handful; of Sorrel-ſeeds and Divels-bit, of each two pugils; of Ivie and Juniper-berries, of each half an ounce; of the flowers of Bugloſs, Violets, and red-Roſes, of each two pugils: powder them ſomwhat groſly; then ſoak or ſteep them for a night in white wine and Roſe-water: then add thereto of Bole-Armenick one ounce; of Treacle half an ounce; diſtill them all in *Balneo Mariæ*, and keep the diſtilled liquor in a vial of glaſs well covered or cloſe ſtopped for your uſe: let the patient tak ſix ounces thereof with Sugar and a little Cinnamon and Saffron: then let him walk, and then ſweat as is aforeſaid: the treacle and cordial-water formerly preſcribed, are verie profitble for this purpoſe. Alſo the the water following is greatly commended.

Another.

Take of Sorrel ſix hand-fuls; of *Rue* one handful: drie them and macerate them in vineger for the ſpace of four and twentie hours, adding thereto four ounces of Treacle: make thereof a diſtillation in *Balneo Mariæ*, and let the diſtilled water bee kept for your uſe; and ſo ſoon as the patient doth think himſelf to bee infected; let him take four ounces of that liquor, then let him walk and ſweat.

What mean to hee uſed in ſweating.

Hee muſt leav ſweating when hee beginneth to wax faint and weak; or when the humor that run's down his bodie begin's to wax cold, then his bodie muſt bee wiped with warm cloaths, and dried. The patient ought not to ſweat with a full ſtomach; for ſo the heat is called away from performing the office of concoction: alſo hee muſt not ſleep when hee is in his ſweat; leſt the malignitie go inwardly with the heat and ſpirits unto the principal parts: but if the patient bee much inclined to ſleep, hee muſt bee kept from it with hard rubbing, and bands tied about the extreme parts of his bodie, and with much noiſ of thoſe that are about him, and let his friends comfort him with the good hope that they have of his recoverie; but if all this will not keep him from ſleep, diſſolv *Caſtoreum* in tart vineger, and *aqua vitæ*, and let it bee injected into his noſtrils: and let him bee kept continually wakeing the firſt day, and on the ſecond and third, even unto the fourth; that is to ſay, unto the perfect expulſion of the venom; and let him not ſleep above three or four hours on a daie and a night. In the mean time let the Phyſician that ſhall bee preſent conſider all things by his ſtrength: for it is to bee feared, that great watchings will diſſolv the ſtrength, and make the patient weak: you muſt not let him eat within three hours after his ſweating; in the mean ſeaſon, as his ſtrength ſhall require, let him take the rinde of a *preſerved* Citron, *conſerv* of Roſes, bread toſted and ſteeped in wine, the meat of *preſerved* Myrabolane, or ſom ſuch like thing.

## CHAP. XXIII.

*Of Epithems to bee uſed for the ſtrengthening of the principal parts.*

Whereof they muſt bee made.

THere are alſo ſom topick medicines to bee reckoned amongſt Antidotes, which muſt bee outwardly applied as ſpeedily as may bee, as cordial and hepatick Epithems for the ſafetie of the noble parts, and ſtrengthening of the faculties, as thoſe that drive the venenate air far from the bowels: they may bee made of cordial things not onely hot, but alſo cold, that they may temper the heat, and more powerfully repercuſs. They muſt bee applied warm with ſcarlet, or a double linnen cloth, or a ſoft ſpunge dipped in them, if ſo bee that a Carbuncle do not poſſeſs the *regions* of the moſt noble parts; for it is not fit to uſe repercuſſives to a Carbuncle.

Repercuſſives not fit to bee applied to Carbuncles.

You may make Epithems after the following forms; R. *aquar. roſ. plantag. & ſolan. an.* ℥iv. *aquæ acetoſ. vini granat. & aceti, an.* ℥iii. *ſantal. rub. & coral. rub. pulveriſ. an.* ℥iii. *theriac. vet.* ℥ß. *camph.* ℈ii. *croci* ℈i. *carioph.* ʒß. *miſce, fiat epithema.* Or elſ, R. *aqu. roſ. & plantag. an.* ℥x.

*aceti*

*acet. roſ.* ℥iv. *caryoph. ſant. rub. coral. rub. pulveriſ. pul. diamargarit. frigid. an.* ℥iß. *caphuræ moſchi an.* ℈i. *fiat epithema.* Or, ℞. *aquar. roſar. & meliſſæ, an.* ℥iv. *aceti roſ.* ℥iii. *ſant. rub.* ℥i. *caryophil.* ℥ß. *croco* ℈ii. *caphuræ* ℈i. *boli arm. terra ſigil. & zedoar. an.* ℥i. *fiat epithema.* Or elſ, ℞. *aceti roſ. & aquæ roſat. an.* ℔ß. *caphuæ* ℥ß. *theriac. & mithridat. an.* ℥i. *fiat epithema.* Or elſ, *aqu. roſar. nenuph. bugloſ. acetoſæ, aceti roſar. an.* ℔ß. *ſant. rub. roſ. rub. an.* ℥iii. *flor. nenuph. violar. caphur. an.* ℥ß. *methridat. & theriac an.* ℥ii. *terantur & miſceantur ſimul omnia.* When you intend to uſe them, take ſom portion of them in a veſſel by its ſelf, wherewith let the affected bowel bee fomented warm.

## CHAP. XXIV.

*Whether purgeing and blood-letting bee neceſſarie in the beginning of peſtilent diſeaſes.*

SO ſoon as the heart is ſtrengthened and corroborated with cordials and antidotes, wee muſt com to phlebotomie and purgeing. As concerning blood-letting in this caſe there is a great controverſie among Phyſicians. Thoſe that wiſh it to bee uſed, ſay or affirm that the peſtilent Fever doth infix it ſelf in the blood, and therein alſo the peſtilent malignitie taketh its ſeat; and therefore it will ſoon infect the other humors, unleſs that the blood bee evacuated, and the infection that remaineth in the blood bee thereby taken away. Contrariwiſe, thoſe that do not allow phlebotomie in this caſe, alledg, that it often commeth to paſs that the blood is void of malignitie when the other humors are infected with the venemous contagion. If anie man require my judgment in this doubtful queſtion, I ſay, that the peſtilence ſomtimes doth depend on the default of the Air: this default beeing drawn through the paſſages of the bodie, doth at length pierce unto the intrails, as wee may underſtand by the abſceſſes which break out one while behinde the ears, ſomtimes in the arm-holes, and ſomtimes in the groins, as the brain, heart or *liver* are infected. And hereof alſo com Carbuncles, and other collections of matter, and eruptions, which are ſeen in all parts of the bodie; by reaſon that nature uſeing the ſtrength of the expulſive facultie, doth drive forth whatſoever is noiſom or hurtful. Therefore if the Phyſician will follow this motion of nature, hee muſt neither purge nor *let* blood, leſt that by a contrarie motion, that is, by drawing in from without, the motion of nature which proceed's outwardly from within, ſhould bee troubled. So wee often ſee in thoſe who are purged or *let* blood for ſuch Buboes as com through unlawful copulation, that the matter is thereby made contumacious, and by drawing it inwardly, it ſpeedily cauſſeth the French Pocks.

Reaſons for and againſt blood-letting in the Plague.

The compoſing of this controverſie

Wherefore, when Buboes, Carbuncles, and other peſtilent eruption appear, which com through the default of the air, wee ought to abſtain from purgeing and phlebotomie; but it is ſufficient to fore-arm the heart inwardly and outwardly with Antidotes that are endued with a proper virtue of reſiſting the poiſon. For it is not to bee doubted, but that when nature is debilitated with both kindes of evacuation, and when the ſpirits together with the blood are exhauſted, the venemous air will ſoon pierce, and bee received into the emptie bodie, where it exerciſeth its tyrannie to the utter deſtruction thereof.

An hiſtorie.

In the year of our Lord God 1566. in which year there was greaat mortalitie throughout all France, by reaſon of the peſtilence and peſtilent diſeaſes, I earneſtly and diligently inquired of all the Phyſicians and Chyrurgians of all the Cities (through which King *Charls* the Ninth paſſed in his progreſs unto *Bayon*) what ſucceſs their patient had after they were *let* blood and purged; whereunto they all anſwered alike, that they had diligently obſerved, that all that were infected with the Peſtilence, and were *lett* bleed ſom quantitie of blood, or had their bodies ſomwhat ſtrongly purged, thenceforwards waxed and weaker, and ſo at length died; but others which were not *let* blood nor purged, but took cordial Antidotes inwardly, and applied them outwardly, for the moſt part eſcaped and recovered their health: for that kinde of Peſtilence took its original of the primitive and ſolitarie default of the Air, and not of the corruption of the humors.

When purging and bleeding may bee uſed.

The like event was noted in the hoarſneſs that wee ſpake of before: that is to ſay, that the patients waxed worſ and worſ by purgeing and phlebotomie; but yet I do not diſallow either of thoſe remedies, if there bee great fulneſs in the bodie, eſpecially in the beginning, and if the matter have a cruel violence, whereof may bee feared the breaking in unto ſom noble part. For wee know that it is confirmed by *Hippocrates*, that what diſeaſ ſoever is cauſſed by repletion, muſt bee cured by evacuation; and that in diſeaſes that are verie ſharp, if the matter do ſwell, it ought to be remedied the ſame day, for delaie in ſuch diſeaſes is dangerous; but ſuch diſeaſes are not cauſſed or inflicted upon man's bodie by reaſon or occaſion of the peſtilence, but of the diſeaſed bodies, and diſeaſes themſelvs commixed together with the peſtilence: therefore then peradventure it is lawful to purge ſtrongly, and to *let* a good quantitie of blood, leſt that the peſtilent venom ſhould take hold of the matter that is prepared, and ſo infect it with a contagion, whereby the peſtilence

*Aph. 22. ſect. 2.*
*Aph. 10. ſect. 4.*

*Cap. 7. lib. 3.* taketh new and for greater ſtrength; eſpecially as *Celſus* admoniſheth us, where hee ſaith, that, by how much the ſooner thoſe ſudden invaſions do happen, by ſo much the ſooner remedies muſt bee uſed, yea or rather raſhly applied; therefore if the veins ſwell, the face wax fierie red; if the arteries of the *temples* beat ſtrongly; if the patient can verie hardly breath by reaſon of a weight in his ſtomach; if his ſpittle bee bloodie; then ought hee to bee let blood without delaie, for the cauſſes before-mentioned. It ſeem's beſt to open the *Liver*-vein on the left arm, whereby the heart and ſpleen may bee better diſcharged of their abundant matter; yet blood-letting is not good at all times, for it is not expedient when the bodie beginneth to wax ſtiff by reaſon of the comming of a Fever; for then by drawing back the heat and ſpirits inwardly, the outward parts beeing deſtitute of blood, wax ſtiff and cold; therefore blood cannot bee letten then without great loſs of the ſtrength, and perturbation of the humors. And it is to bee noted, that when thoſe plethorick cauſes are preſent, there is one Indication of blood-letting in a ſimple peſtilent Fever, and another in that which hath a *Bubo, id eſt*, a Botch or a Carbuncle joined therewith. For in one or both of theſe, beeing joined with a vehement and ſtrong burning Fever, blood muſt bee letten by opening the vein that is neareſt unto the tumor or ſwelling againſt nature, keeping the ſtraightneſs of the *fibres*, that this beeing open, the blood might bee drawn more directly from the part affected; for all and everie retraction of putrefied blood unto the noble parts, is to bee avoided, becauſ it is noiſom and hurtful to nature, and to the patient. Therefore, for example ſake, admit the patient bee plethorick by repletion; which is called *Ad Vaſa, id eſt*, unto the Veſſels, and *Ad Vires, id eſt*, unto the Strength: and therewithal hee hath a tumor that is peſtilent in the parts belonging unto head or neck; the blood muſt bee *let* out of the cephalick or median vein, or out of one of their branches diſperſed in the arm on the grieved ſide. But if through occaſion of fat, or anie other ſuch like cauſ, thoſe veins do not appear in the arm, there bee ſom that give counſel in ſuch a caſe to open the vein that is between the fore-finger and the thumb, the hand beeing put into warm water, whereby that vein may ſwell and bee filled with blood gathered thither by means of the heat.

Why blood muſt bee *let* on the left arm in the Plague.

If the tumor bee under the arm-hole, or about thoſe places, the *liver*-vein, or the median muſt bee opened which runneth along'ſt the hand: if it bee in the groin, the vein of the hamm, or *Saphena*, or anie other vein above the foot that appeareth well, but alwaies on the grieved ſide. And phlebotomie muſt bee performed before the third daie: for this diſeaſ is of the kinde or nature of ſharp diſeaſes; becauſ that within four and twentie hours it runneth paſt help. In letting of blood you muſt have conſideration of the ſtrength. You may perceiv that the patient is readie to ſwound, when that his forehead waxeth moiſt, with a ſmall ſweat ſuddenly ariſeing, by the akeing or pain at the ſtomach, with an appetite to vomit, and deſire to go to ſtool, gapeing, blackneſs of the lips, and ſudden alteration of the face unto paleneſs: and laſtly moſt certainly by a ſmall and ſlow pulſ: and then you muſt lay your finger on the vein, and ſtop it until the patient com to himſelf again, either by nature, or elſ reſtored by art; that is to ſay, by giveing unto him bread dipped in wine, or anie other ſuch like thing: then if you have not taken blood enough, you muſt let it go again, and bleed ſo much as the greatneſs of the diſeaſ, or the ſtrength of the patient will permit or require: which beeing don ſom of the Antidotes that are preſcribed before will bee verie profitable to bee drunk, which may repair the ſtrength, and infringe the force of the malignitie.

## CHAP. XXV.

### *Of purgeing medicines in a Peſtilent diſeaſ.*

What purges fit in the Plague.

IF you call to minde the proper indications, purgeing ſhall ſeem neceſſarie in this kinde of diſeaſ, and that muſt bee preſcribed as the preſent caſe and neceſſitie requireth; rightly conſidering that the diſeaſ is ſudden, and doth require medicines that may with all ſpeed drive out of the bodie the hurtful humor wherein the noiſom qualitie doth lurk and is hidden; which medicines are divers by reaſon of the diverſitie of the kinde of the humor, and the condition or temperature of the patient. For this purpoſe ſix grains of Scammonie beaten into powder, or elſ ten grains are commonly miniſtred to the patient with one dram of Treacle. Alſo pils may bee made in this form: Take of Treacle and Mithridate, of each one dram; of *Sulphur vivum* finely powdred half a dram; of *Diagridium* four grains: make thereof Pils. Or, take three drams of Aloës; of Myrrh and Saffron of each one dram; of white Hellebore and *Aſarabacca*, of each four ℈. make thereof a maſs with old treacle, and let the patient take four ſcruples thereof for a doſe, three hours before meat. *Ruffus* his pils may bee profitably given to thoſe that are weak. The antient Phyſicians have greatly commended Agarick for this diſeaſ, becauſ it doth draw the noiſom humors out of all the members:

Pils.

and

and the virtues thereof are like unto thoſe of Treacle; for it is thought to ſtrengthen the heart, and to draw out the malignitie by purgeing. To thoſe that are ſtrong, the weight of two drams may bee given, and to thoſe that are more weak, half a dram. It is better to give the infuſion in a decoction, then in ſubſtance; for beeing elected and prepared truly into Trochiſces, it may bee called a divine kinde of medicine.

*Antimonium* is highly praiſed by the experience of manie; but becauſ I know the uſe thereof is condemned by the councel and decree of the School of Phyſicians at Paris, I will here ceaſ to ſpeak of it.

Thoſe medicines that cauſ ſweats are thought to excel all others, when the Peſtilence commeth of the venemous Air; among whom the efficacie of that which followeth hath been prooved, to the great good of manie in that Peſtilence which was lately throughout all Germanie, as *Matthias Rodler* Chancellor to Duke *George* the Count Palatine ſignified unto mee by letters.

They do take a bundle of Mugwurt, and of the aſhes thereof after it is burn't, they make a lee with four pintes of water; then they do ſet it over the fire, and boil it in a veſſel of earth well leaded, until the liquor bee conſumed, the earthie dregs falling into the bottom like unto ſalt, whereof they make Trochiſces of the weight of a crown of gold: then they diſſolv one or two of theſe Trochiſces, according to the ſtrength of the patient, in good Muskadine, and give it the patient to drink, and let him walk after that hee hath drunk it for the ſpace of half an hour; then lay him in his bed, and there ſweat him two or three hours, and then hee will vomit, and his bellie will bee looſed as if hee had taken Antimonie; and ſo they were all for the moſt part cured, eſpecially all thoſe that took that remedie betimes: and before the diſeaſ went to their heart; as I my ſelf have prooved in ſom that were ſick at Paris, with moſt happie ſucceſs: Truely Mugwurt is highly commended by the Antient Phyſicians, beeing taken and applied inwardly or outwardly againſt the biteings of venemous creatures; ſo that it is not to bee doubted but that it hath great virtue againſt the Peſtilence.

An effectual ſudorifick and alſo purgeing medicine.

The virtues of Mugwurt.

I have heard it moſt certainly reported by *Gilbertus Heroaldus* phyſician of *Mompilier*, that eight ounces of the pickle of Anchovis, drunk at one draught, is a moſt certain & approved remedie againſt the Peſtilence, as hee and manie other have often found by experience For the Plague is no other thing but a verie great putrefaction; for the correction and amendment whereof, there is nothing more apt or fit then this pickle or ſubſtance of Anchovis, beeing melted by the Sun and force of the ſalt that is ſtrewed thereon. There bee ſom which infuſe one dram of Walwurt-ſeed in white wine, and affirm that it drunken wil perform the like effect as Antimonie. Others diſſolv a little weight of the ſeed of *Rue* beeing bruiſed in Muſkadine, with the quantitie of a bean of Treacle, and ſo drink it. Others beat or bruiſ an handful of the leavs or tops of Broom in half a pinte of white wine, and ſo give it to the patient to drink, to cauſ him to vomit, looſ his bellie, and make him to ſweat. Truly thoſe that are wounded or bit with venemous beaſts, If they binde broom above the wound, it will prohibit or hinder the venom from diſperſing it ſelf, or going anie further: therefore a drink made thereof will prohibit the venom from going anie nearer the heart. Som take of the root of Elecampane, *Gentian*, Tormentil, Kermes-berries and broom; of the powder of Ivorie and Hartſ-horn, of each half a dram: they do bruiſ and beat all theſe, and infuſe them for the ſpace of four and twentie hours in white wine and *aqua vitæ* on the warm embers, and then ſtrain it, and give the patient three or four ounces thereof to drink; this provoke's ſweat, and infringeth the power of the poiſons: and the potion following hath the ſame virtue.

*Vide Rondelet. Lib.7.de piſ.c3.*

Take good Muſtard half an ounce; of Treacle or Mithridate the weight of a bean; diſſolv them in white wine, and a little *aqua vitæ*, and let the patient drink it, and ſweat thereon with walking. You may alſo roſt a great Onion made hollow, and filled with half a dram of Treacle and vineger under the embers; and then ſtrain it, and mix the juice that is preſſed out of it with the water of Sorrel, *Carduus Benedictus*, or anie other cordial thing, and with ſtrong wine; and give the patient to drink thereof to provoke ſweat, and to repel the malignitie. Or elſ take as much Garlick as the quantitie of a big Nut; of *Rue* and Celandine, of each twentie leavs; bruiſ them all in white wine and a little *aqua vitæ*; then ſtrain it, and give the patient thereof to drink. There bee ſom that do drink the juice that is preſſed out of Celandine and Mallows, with three ounces of Vineger, and half an ounce of the oil of Wall-nuts, and then by much walking do unburthen their ſtomach and bellie upwards and downwards, and ſo are helped. When the venemous air hath already crept into and infected the humors, one dram of the dried leavs of the Bay-tree macerated for the ſpace of two daies in Vineger and drunk, is thought to bee a moſt ſoveraign medicine to provoke ſweat, looſneſs of the bellie, and vomiting.

A Potion.

*Matthiolus* in his Treatiſe *de Morbo gallico* writeth, that the powder of *Mercurie* miniſtred unto the patient with the juice of *Carduus Benedictus*, or with the Electuarie *de Gemmis*, will drive away the peſtilence before it bee confirmed in the bodie, by provokeing vomit, looſ-

neſs of the bellie and ſeat: one dram of Calchanthum or white Copperas diſſolved in Roſe-water, performeth the like effect in the ſame diſeaſ. Som do give the patient a little quantitie of the oil of Scorpions with white wine to expel the poiſon by vomit, and therewithal they annoint the region of the heart, the breſt and the wriſts of the hands. I think theſe verie meet to bee uſed often in bodies that are ſtrong and well exerciſed, becauſ weaker medicines do evacuate little or nothing at all, but onely moov the humors, whereby commeth a Fever. When a ſufficient quantitie of the malignitie is evacuated, then you muſt miniſter things that may ſtrengthen the bellie and ſtomach, and with-hold the agitation or working of the humors: and ſuch is the confection of Alkermes.

## CHAP. XXVI.

*Of manie Symptoms which happen together with the Plague: and firſt of the pain of the head.*

The cauſ of phrenſie in the Plague.

IF the malignitie bee carried into the brain, and nature bee not able to expel it, it inflame's not onely it, but alſo the membranes that cover it: which inflammation doth one while hurt, trouble, or aboliſh the imagination; another while the judgment; and ſomtimes the memorie; according to the ſituation of the inflammation, whether it bee in the former, hinder, or middle part of the head; but hereof commeth alwaies a Phrenſie, with fierie redneſs of the eies and face and heavineſs and burning of the whole head. If this will not bee amended with Clyſters, and with opening the Cephalick vein in the arm, the arteries of the *temples* muſt bee opened, takeing ſo much blood out of them, as the greatneſs of the Symptoms and the ſtrength of the patient ſhall require and permit. Truly the inciſion that is made in opening of an arterie will cloſe and join together as readily, and with as little difficultie, as the inciſion of a vein. And of ſuch an inciſion of an arterie, commeth preſent help; by reaſon that the tenſive and ſharp vapors do plentifully breath out together with the arterious blood. It were alſo verie good to provoke a flux of blood at the noſe, if nature bee apt to exonerate herſelf that way. For as *Hippocrates* ſaith, when the head is grieved, or generally aketh, if matter, water, or blood flow out at the noſtrils, mouth, or ears, it preſently cure's the diſeaſ. Such bleeding is to bee provoked by ſtrong blowing, or ſtriveing to cleanſ the noſe, by ſcratching or picking of the inner ſide of the noſtrils, by pricking with an horſ-hair, and long holding down of the head.

The benefit of opening an arterie.

*Aph.*10.*ſect.*6.

An hiſtorie.

The Lord of *Fontains*, a Knight of the Order, when wee were at *Bayon*, had a bleeding at the noſe, which came naturally for the ſpace of two daies, and thereby hee was free'd of a peſtilent Fever which hee had before, a great ſweat riſeing therewithal, and ſhortly after his Carbuncles came to ſuppuration, and by God's grace hee recovered his health beeing under my cure. If the blood do flow out and cannot bee ſtopped when it ought, the hands, arms, and legs muſt bee tied with bands; and ſponges wet in Oxycrate muſt bee put under the arm-holes, cupping-glaſſes muſt bee applied unto the dugs, the *region* of the *Liver* and Spleen; and you muſt put into the noſtrils, the doun of the willow-tree, or anie other aſtringent medicine, incorporated with the hairs pluck't from the flank, bellie or throat of an Hare, Bole-Armenick, *Terra Sigillata*, the juice of Plantane and Knot-graſs mixed together; and furthermore the patient muſt bee placed or laied in a cool place. But if the pain bee nothing mitigated notwithſtanding all theſe fluxes of blood, wee muſt com to medicines that procure ſleep, whoſe forms are theſe.

To ſtay bleeding.

Medicines to procure ſleep.

Take of green Lettuce one handful; flowrs of water-Lillies and Violets, of each two pugils; one head of white-Poppie bruiſed; of the four cold ſeeds, of each two drams; of Liquorice and Raiſins, of each one dram: make thereof a decoction, and in the ſtraining diſſolv one ounce and a half of *Diacodion:* make thereof a large potion to bee given when they go to reſt. Alſo Barlie-cream may bee prepared in the water of water-Lillies and of Sorrel, of each two ounces; adding thereto ſix or eight grains of *Opium:* of the four cold ſeeds, and of white-Poppie ſeeds, of each half an ounce; and let the ſame bee boiled in broths with Lettuce and Purſlain; alſo the pills *de Cynogloſſo, i. e.* Hounds-tongue may bee given. Clyſters that provoke ſleep muſt bee uſed which may bee thus prepared.

Take of Barlie-water half a pinte; oil of Violets and water-Lillies, of each two ounces; of the water of Plantain and Purſlain, or rather of their juices, three ounces; of Camphir ſeven grains, and the whites of three eggs: make thereof a Clyſter. The head muſt bee fomented with Roſe-vineger, the hair beeing firſt ſhaven away, leaving a double cloth wet therein on the ſame, and often renewed. Sheeps-lungs taken warm out of the bodies, may bee applied to the head, as long as they are warm. Cupping-glaſſes with and without ſcarification may bee applied to the neck and ſhoulder-blades. The arms and legs muſt bee ſtrongly bound, beeing firſt well rubbed to divert the ſharp vapors and humors from the head. Frontals may alſo bee made on this manner. Take of the oil of Roſes and water-Lillies, of each two ounces; of the oil of Poppie half an ounce; of *Opium*, one dram; of Roſe-vineger, one ounce; of Camphir half a dram; mix them together. Alſo Nodules

may

may bee made of the flowrs of Poppies, Henbane, water-Lillies, Mandrags beaten in Roſe-water with a little Vineger, and a little Camphir, and let them bee often applied to the noſtrils: for this purpoſe Cataplaſms alſo may bee laid to the forehead. As, Take of the mucilage of the ſeeds of *Pſilium, id eſt.* Flea-wurt, and Quince-ſeeds extracted in Roſe-water, three ounces; of Barlie-meal four ounces; of the powder of Roſe-leavs, the flowers of water-Lillies and Violets, of each half an ounce; of the ſeeds of Poppies and Purſlain, of each two ounces; of the water and vineger of Roſes, of each three ounces: make thereof a Cataplaſm, and applie it warm unto the head. Or take of the juice of Lettuce, water-Lillies, Henbane, Purſlain, of each half a pinte; of Roſe-leavs in powder, the ſeeds of Poppie, of each half an ounce; oil of Roſes three ounces; of vineger two ounces; of Barlie-meal as much as ſhall ſuffice: make thereof a Cataplaſm in the form of a liquid Pultis. When the heat of the head is mitigated by theſe medicines, and the inflammation of the brain aſſwaged, wee muſt com unto digeſting and reſolving fomentations, wich may diſperſ the matter of the vapors. But commonly in pain of the head, they do uſe to binde the forehead and hinder part of the head verie ſtrongly, which in this caſe muſt bee avoided.

A Cataplaſm.

## CHAP. XXVII.

*Of the heat of the Kidnies.*

THe heat of the Kidnies is tempered by annointing with *unguent. refrigerans Galen* newly made, adding thereto the whites of eggs well beaten, that ſo the ointment may keep moiſt the longer; let this liniment bee renewed everie quarter of an hour, wipeing away the reliques of the old. Or, ℞, *aq. roſ.* ℔.ß. *ſucci plant.* ʒiv. *alb. ovorum* iv. *olei roſacei, & nenuph. an.* ʒii. *aceti roſ.* ʒiii. *miſce ad uſum.* When you have annointed the part, lay thereon the leavs of water-Lillies or the like hold herbs, and then preſently thereupon a double linnen cloth dipped in oxycrate and wrung out again, and often changed; the patient ſhall not lie upon a fether-bed, but on a quilt ſtuffed with the chaff of Oats, or upon a Mat with manie doubled cloaths or Chamelet ſpread thereon. To the *region* of the heart may in the mean time bee applied a refrigerateing and alexiterial medicine, as this which followeth. ℞. *ung. roſat.* ʒiii. *olei nenupharini,* ʒii. *acet. roſ. & aq. roſ. an.* ʒi. *theriacæ,* ʒi. *croci,* ʒß. Of theſe melted and mixed together make a ſoft ointment, which ſpred upon a ſcarlet cloth may bee applied to the *region* of the heart. Or, ℞. *theriacæ opt.* ʒiß. *ſucci citri acidi, & limonis, av* ʒß. *coral. rub. & ſem. roſar. rub. an.* ʒß. *caphuræ & croci, an.* gra. iiii. let them bee all mixed together, and make an ointment or liniment.

An ointment for the reins.

An ointment for the heart.

At the head of the patient as hee lie's in his bed, ſhall bee ſet an Ewr or cock with a baſin under it to receiv the water, which by dropping may reſemble rain. Let the ſoles of the feet and palms of the hands bee gently ſcratched, and the patient lie far from noiſ, and ſo at length hee may fall to ſom reſt.

The noiſ of dropping water draw's on ſleep.

## CHAP. XXVIII.

*Of the Eruptions and Spots, which commonly are called by the name of Purples and Tokens.*

THe skin, in peſtilent Fevers, is marked and variegated in divers places with ſpots, like unto the biteings of Fleas or Gnats, which are not alwaies ſimple, but manie times ariſe in form like unto a grain of millet. The more ſpots appear, the better it is for the patient: they are of divers colors according to the virulencie of the malignitie, aud condition of the matter, as red, yellow, brown, violet or purple, blew and black. And becauſ for the moſt part they are of a purple color, therefore wee call them purples. Others call them *Lenticulæ*; becauſ they have the color and form of Lentiles. They are alſo called *Papiliones, (i.)* Butterflies; becauſ they do ſuddenly ſeiz or fall upon divers *regions* of the bodie, like unto winged Butterflies; ſomtimes the face, ſomtimes the arms and legs, and ſomtimes all the whole bodie; oftentimes they do not onely affect the upper part of the skin, but go deeper into the fleſh, ſpecially when they proceed of matter that is groſs and aduſt. They do ſomtimes appear great and broad, affecting the whole arm, leg or face, like unto an *Eryſipelas:* to conclude, they are divers according to the varietie of the humor that offend's in quantitie or qualitie.

The differences of the ſpots in the Plague:

Their ſeveral names, and the reſons of them.

If they are of a purple or black color, with often ſwounding, and ſink in ſuddenly without anie manifeſt cauſ, they fore-ſhew death.

When ſigns of death.

The cauſ of the breaking out of thoſe ſpots, is the working or heat of the blood, by reaſon of the crueltie of the venom received, or admitted. They often ariſe at the beginning of a peſtilent Fever: manie times before the breaking out of the Sore, or Botch or Carbuncle,

and manie times after: but then they shew so great a corruption of the humors in the bodie, that neither the sores nor carbuncles will suffice to receiv them; and therefore they appear as fore-runners of death. Somtimes they break out alone, without a botch or carbuncle, which if they bee red, and have no evil symptoms joyned with them, they are not wont to proov deadlie: they appear, for the most part, on the third or fourth daie of the disease, and somtimes later, and somtimes they appear not before the patient bee dead; becaus the working or heat of the humors beeing the off-spring of putrefaction, is not as yet restrained and ceased.

Why they somtimes appear after the death of the patient.

Wherefore then principally the putrid heat, which is greatest a little before the death of the patient, drive's the excremental humors, which are the matter of the spots unto the skin; or elss, becaus nature in the last conflict hath contended with som greater endeavor then before (which is common to all things that are readie to die) a little before the instant time of death, the pestilent humor beeing presently driven unto the skin; and nature thus weakned by these extreme conflicts falleth down prostrate, and is quite overthrown by the remnant of the matter.

## CHAP. XXIX.

*Of the cure of Eruptions and Spots.*

They are to bee cured by driveing forth.

YOu must first of all take heed, lest you drive in the humor that is comming outwards with repercussives: therefore beware of cold, all purgeing things, phlebotomie, and drowsie or sound sleeping. For all such things do draw the humors inwardly, and work contrarie to nature. But it is better to provoke the motion of nature outwardly, by applying of drawing medicines outwardly, and ministring medicines to provoke sweat inwardly; for otherwise by repelling and stopping the matter of the eruptions, there will bee great danger, lest the heart bee oppressed with the abundance of the venom flowing back; or elss by turning into the bellie, it inferr's a mortal bloodie flux: which discommodities that they may bee avoided, I have thought good to set down this remedie, whose efficacie I have known and prooved manie times, and on divers persons, when by reason of the weakness of the expulsive facultie, and the thickness of the skin, the matter of the spots cannot break forth, but is constrained to lurk under the skin, lifting it up into bunches and knobs.

The indication of cureing taken from the like.

I was brought unto the invention of this remedie, by comparison of the like. For when I understood, that the essence of the French pocks (and likewise of the pestilence) consisted in a certain hidden virulencie, and venemous qualitie, I soon descended unto that opinion, that even as by the annointing of the bodie with the unguent compounded of Quick-silver, the gross and clammie humors which are fixed in the bones, and unmoovable, are dissolved, relaxed, and drawn from the center into the superficial parts of the bodie, by strengthening and stirring up the expulsive facultie, and evacuated by sweating and fluxing at the mouth; that so it should com to pass in pestilent fevers, that nature beeing strengthened with the same kinde of unction, might unload her self of som portion of the venemous and pestilent humor, by opening the pores and passages, and letting it break forth into spots and pustles, and into all kinde of eruptions. Therefore I have annointed manie in whom nature seemed to make passage for the venemous matter verie slowly, first loosing their bellie with a glyster, and then giveing them treacle-water to drink, which might defend the vital facultie of the heart, but yet not distend the stomach, as though they had the French pocks, and I obtained my expected purpose: In stead of the treacle-water you may use the decoction of *Guaicum*, which doth heat, drie, provoke sweat, and repel putrefaction, adding thereto also vineger, that by the subtiltie thereof, it may pierce the better, and withstand the putrefaction. This is the description of the unguent.

An ointment to draw them forth when as they appear too slowly.

Take of Hogs-greas one pound, boil it a little with the leavs of *Sage*, *Time*, Rosemarie, of each half an handfull, strain it, and in the straining extinguish five ounces of Quick-silver, which hath been first boiled in vineger with the fore-mentioned herbs; of *Sal Nitrum* three drams; the yelks of three eggs boiled until they bee hard: of Treacle and Mithridate, of each half an ounce; of Venice-Turpentine, oil of Scorpions and Bays, of each three ounces; incorporate them altogether in a mortar, and make thereof an unguent, wherewith annoint the patient's arm-holes and groins, avoiding the parts that belong to the head, breast, and back-bone: then let him bee laid in his bed, and covered warm, and let him sweat there for the space of two hours, and then let his bodie bee wiped and cleansed; and if it may bee, let him bee laid in another bed, and there let him bee refreshed with the broth of the decoction of a Capon, reer eggs, and with such like meats of good juice that are easie to bee concocted and digested; let him bee annointed the second and third daie, unless the spots appear before.

If the patient flux at the mouth, it must not be stopped: when the spots and pustles do all appear, and the patient hath made an end of sweating, it shall bee convenient to use diuretick

diuretick medicines,for by theſe the remnant of the matter of the ſpot,which happily could not all breath forth, may eaſily bee purged and avoided by urine.

If anie noble or gentlemen refuſe to bee annointed with this unguent, let them bee encloſed in the bodie of a Mule or Horſ that is newly killed, and when that is cold, let them bee laied in another, until the puſtles and eruptions do break forth, beeing drawn by that natural heat. For ſo *Matthiolus* writeth that *Valentinus*,the ſon of Pope *Alexander* the ſixt,was delivered from the danger of moſt deadlie poiſon which hee had drunk. *In proœm.lib.6. Dioſc.*

## CHAP. XXX.

### *Of a peſtilent* Bubo, *or Plague-ſore.*

A Peſtilent *Bubo* is a tumor at the beginning long and moveable, and in the ſtate, and full perfection copped, and with a ſharp head, unmoveable and fixed deeply in the glandules, or kernels; by which the brain exonerate's it ſelf of the venemous and peſtiferous matter into the kernels that are behinde the ears, and in the neck: the heart into thoſe that are in the arm-holes; and the *Liver*, into thoſe that are in the groin; that is,when all the matter is groſs and clammie,ſo that it cannot bee drawn out by ſpots and puſtles breaking out on the skin; and ſo the matter of a Carbuncle is ſharp, and ſo fervent, that it maketh an *Eſchar* on the place where it is fixed. In the beginning, while the *Bubo* is breeding, it maketh the patient to feel, as it were, a cord or rope ſtretched out in the place, or a hardned nerv with pricking pain: and ſhortly after the matter is raiſed up as it were into knob, and by little and little it groweth bigger, and is inflamed, theſe accidents before mentioned accompanying it.If the tumor be red,and increaſ by little & little,it is a good and ſalutarie ſign: but if it bee livid or black,and com verie ſlowly unto his juſt bigneſs, it is a deadlie ſign;It is alſo a deadlie ſign if it increaſ ſuddenly,and com to his juſt bigneſs as it were with a ſwift violence, and as in a moment, have all the ſymptoms in the higheſt exceſs; as pain, ſwelling and burning. Buboes or Sores appear ſomtimes of a natural color, like unto the skin, and in all other things like unto an œdematous tumor, which notwithſtanding will ſuddenly bring the patient to deſtruction; like thoſe that are livid and black,wherefore it is not good to truſt too much to thoſe kindes of tumors.

What a peſtilent *Bubo* is.

The ſigns of *Bubo's* ſalutarie and deadlie.

## CHAP. XXXI.

### *Of the cure of* Buboes,*or Plague-ſores.*

SO ſoon as the Bubo appear's, applie a Cupping-glaſs with a great flame unto it, unleſs it bee that kinde of Bubo which will ſuddenly have all the accidents of burning and ſwelling in the higheſt nature; but firſt the skin muſt bee annointed with the oil of lillies, that ſo it beeing made more looſ, the Cupping-glaſs may draw the ſtronger and more powerfully; it ought to ſtick to the part for the ſpace of a quarter of an hour, and bee renewed and applied again everie three quarters of an hour, for ſo at length the venom ſhall bee the better drawn forth from anie noble part that is weak, and the work of ſuppuration or reſolution, which ſoever nature hath aſſailed,will the better and ſooner bee abſolved and perfected: which may bee alſo don by the application of the following ointment.

The uſe of cupping-glaſſes in cureing of a *Bubo*.

Take of *Vnguentum Dialthæa* one ounce and a half; oil of Scorpions half an ounce; of Mithridate diſſolved in *Aqua vitæ*, half a dram; this liniment will verie well relax and looſen the skin, open the pores thereof, and ſpend forth portion of that matter which the Cupping-glaſs hath drawn thither: in ſtead thereof mollifying fomentations may bee made, and other drawing and ſuppurating medicines, which ſhall bee deſcribed hereafter.

A liniment.

A veſicatorie applied in a meet place below the Bubo profit's them verie much but not above; as for example. If the Bubo bee in the throat, the Veſicatorie muſt bee applied unto the ſhoulder-blade on the ſame ſide; if it bee in the arm-holes, it muſt bee applied in the mid'ſt of the arm, or of the ſhoulder-bone, on the inner ſide: if in the groin, in the mid'ſt of the thigh on the inner ſide, that by the double paſſage that is open for to draw out the matter, the part wherein the venom is gathered together, may bee the better exonerated.

Spurge, Crow-foot, Arſmart, Bear-foot, Brionie, the middle bark of Travellers-joy, the rindes of Mullet, *Flammula* or upright Virgins-bower, are fit for raiſing bliſters. If you cannot com by thoſe ſimple medicines, you may applie this which followeth, which may bee prepared at all times.

Take *Cantharides*, Pepper, *Euphorbium*, Pellitorie of Spain, of each half a dram; of ſower leaven, two drams; of Muſtard one dram, and a little Vineger; the vineger is added thereto to withhold or reſtrain the vehemencie of the *Cantharides*; but in want of this medicine it ſhall ſuffice to drop ſcalding oil or water, or a burning candle, or to lay a burning coal

A compound veſicatorie.

on

on the place: for ſo you may raiſ bliſters, which muſt preſently bee cut away, and you muſt ſee that you keep the ulcers open & flowing as long as you can, by applying the leav's of red-colwurts, Beets, or Ivie dipped in warm water, and annointed with oil or freſh butter. Som applie Cauteries, but Veſicatories work with more ſpeed: for before the Eſchar of the Cauteries will fall away, the patient may die: therefore the ulcers that are made with Veſicatories will ſuffice to evacuate the peſtilent venom, becauſ that doth work rather by its qualitie then by its quantitie. Let the abſceſs bee fomented as is ſhewed before: and then let the medicine following, which hath vertue to draw, bee applied.

Why veſicatories are better then cauteries in a peſtilent *Bubo*.

Fill a great onion, beeing hollowed, with Treacle and the leav's of *Rue*, then roſt it under the hot Embers, beat it with a little Leaven, and a little Swines-greaſ, and ſo applie it warm unto the abſceſs or ſore; let it bee changed everie ſix hours. Or take the roots of Marſh-mallows and Lillies, of each half a pound; of *Line*, Fenugreek, and Muſtard-ſeeds, of each half an ounce; of Treacle one dram; ten Figs, and as much Hogs-greaſ as ſhall ſuffice: make thereof a cataplaſm according to Art. Or, take of Onions and Garlick roſted in the Embers, of each three ounces: bruiſ them with one ounce of ſowr leaven, adding thereto *Unquentum Baſilicon*, one ounce; Treacle one dram; Mithridate half a dram; of old Hogs-greaſ on ounce; of *Cantharides* in powder one ſcruple; of Pigeons-dung two drams: beat them and mix them together into the form of a cataplaſm. Hereunto old Rennet is verie profitable, for it is hot, and therefore attractive, beeing mixed with old Leaven and *Baſilicon*: you ought to uſe theſe until the abſceſs bee grown unto its full ripeneſs and bigneſs; but if preſently after the beginning there bee great inflammation, with ſharp pain, as it often happeneth, eſpecially when the abſceſſes bee of the kinde of Carbuncles; wee muſt abſtain from thoſe remedies that are hot and attractive, and alſo from thoſe that are verie emplaſtick and clammie; becauſ they do altogether cloſe the pores of the skin; or becauſ they reſolv the thinner part of the collected matter, which if it might remain, would bring the other ſooner to ſuppuration: or elſ becauſ they may perchance draw more quantitie of the hot matter then the part can bear; whereof commeth rather corruption then maturation: and laſt of all becauſ they increaſ the fever and pain, which inferreth danger of a convulſion or mortal Gangrene. Therefore in ſuch a caſe it is beſt to uſe cold and temperate local medicines, as the leavs of Henbane and Sorrel roſted under the coales, *Galen's* pultis, and ſuch like.

Strong drawing cataplaſmes.

There are manie that for fear of death, have with their own hands pulled away the *Bubo* with a pair of Smiths-pincers: others have digged the fleſh round about it, and ſo gotten it wholly out. And to conclude others have becom ſo mad, that they have thruſt an hot iron into it with their own hand, that the venom might have a paſſage forth: of all which I do not allow one; for ſuch abſceſſes do not com from without, as the biteings of virulent beaſts, but from within, and moreover becauſ pain is by theſe means increaſed, and the humor is made more malign and fierce. Therefore I think it ſufficient to uſe medicines that relax, open the pores of the skin, and digeſt portion of the venom by tranſpiration, as are theſe that follow. Take the roots of Marſh-mallows and Lillies, of each ſix ounces; of Camomil and Melilot-flowers, of each half an handful; of Lin-ſeeds half an ounce; of the leav's of *Rue* half an handful: boil them and ſtrain them, dip ſponges in the ſtraining, and therewith let the tumor bee fomented along time. Or, take the crum of hot bread, and ſprinkle it with Treacle-water, or with *aqua vitæ*, and Cows-milk or Goats-milk, and the yelks of three egs, put them all on ſtupes or flax, and applie them warm unto the place. Or, take of ſowr Rie-leaven four ounces; of *Baſilicon* two ouuces; three yelks of egs; oil of Lillies two ounces; Treacle one dram: let bee received on ſtupes, and applied in like manner. Or, take of *Diachylon* and *Baſilicon*, of each two ounces; oil of Lillies one ounce and an half: let them bee melted and mixed together, and let it bee applied as is aboveſaid. When you ſee, feel and know, according to reaſon, that the *Bubo* is com to perfect ſuppuration, it muſt bee opened with an inciſion-knife, or an actual or potential Cauterie, but it is beſt to bee don with a potential Cauterie, unleſs that happely there bee great inflammation, becauſ it doth draw the venom from beneath unto the ſuperficial parts, and maketh a larger orifice for the matter that is contained therein: neither muſt it be looked for, that nature ſhould open it of her ſelf; for then there were danger that leſt while nature doth work ſlowly, a venemous vapor ſhould bee ſtirred up, which ſtrikeing the heart by the arteries, the brain by the nervs, and the liver by the veins, ſhould cauſ a new increaſ of the venemous infection. For fear whereof there bee ſom that will not expect the perfect maturation and ſuppuration, but as it were in the mid'ſt of the cruditie and maturitie will make an orifice for it to paſs forth at: yet if it bee done before the tumor bee at his perfect maturitie, pain, a Fever, and all accidents are ſtirred up and enraged, whereof commeth a malign ulcer that often degenerat's into a Gangrene. For the moſt part about the tenth or eleventh daie the work of ſuppuration ſeemeth perfected and finiſhed; but it may bee ſooner or later by reaſon of the application of medicines, the condition of the matter, and ſtate of the part: when the matter commeth forth, you muſt yet uſe ſuppurative and mollifying medicines, to maturate

Againſt ſuch as cut away Plague-ſores.

A digeſtive fomentation.

An anodyne Cataplaſm.

Why it is beſt to open a plague-ſore with a potential cauterie.

maturate the remains thereof; in the mean while cleanſing the ulcer by putting mundificatives into it, as wee ſhall declare in the cure of Carbuncles. But if the tumor ſeem to ſink in, or hide it ſelf again, it muſt bee revoked and procured to com forth again, by applying of Cupping-glaſſes with ſcarification, and with ſharp medicines, yea, and with Cauteries both actual and potential. How to draw forth ſore that ſeem's to go in again.

When the Cauteries are applied, it ſhall bee verie good to applie a veſicatorie a little below it, that there might bee ſom paſſage open for the venom while the Eſchar is in falling away. For ſo they that are troubled with the French-Pocks, ſo long as they have open and flowing ulcers, ſo long are they void of any pain that is worth the ſpeaking of; which ulcers beeing cloſed and cicatrized, they do preſently complain of great pain. If you ſuſpect that the *Bubo* is more malign by reaſon that it is of a green, or black and inflamed color, as are thoſe that com of a melancholick humor by aduſtion, turned into a groſs and rebellious melancholick humor, ſo that by the more copious influx thereof into the part, there is danger of a gangrene and mortification; then the places about the abſceſs muſt bee armed with repercuſſives, but not the abſceſs it ſelf: and this may bee the form of the repercuſſives: Take of the juice of houſ-leek, Purſlain, Sorrel, Night-ſhade, of each two ounces; of Vineger one ounce, the whites of three egs, of oil of Roſes and water-Lillies, of each two ounces and a half: ſtir them together, and applie it about the *Bubo*, and renew it often: or boil a Pomgranat in vineger, beat it with *Unguentum Roſatum*, or *Populeon* newly made, and applie it as is aforeſaid. If theſe things do not ſtop the influx of other humors, the abſceſs it ſelf and the places about it muſt bee ſcarified round about, if the part will permit it; that the part exonerated of portion of the venom may not ſtand in danger of the extinction of the proper and natural heat, by the greater quantitie and malignitie of the humors that flow unto it. In ſcarifying you muſt have care of the great veſſels, for fear of an irrepugnable flux of blood, which in this caſe is verie hard to bee ſtayed or reſiſted; both becauſ the part it ſelf is greatly inflamed, and the humor verie fierce; for the expulſion whereof, nature, careful for the preſervation of the part and all the bodie beſides, ſeemeth to labor and work. But yet you muſt ſuffer ſo much of the blood and humor to flow out as the patient is able to abide without the loſs of his ſtrength. Moreover, you may ſpend forth the ſuperfluous portion of the malignitie, with relaxing, mollifying, and reſolving fomentations: as, Take the roots of Marſh-mallows, Lillies and Elecampane, of each one pound; of Lin-ſeeds and Fenugreek, of each one ounce; of Fennel-ſeeds and Aniſe-ſeeds, of each half an ounce; of the leavs of *Rue*, *Sage*, Roſemarie, of each one handfull, of Camomil and Melilot-flowrs, of each three handfuls; boil them all together, and make thereof a decoction for a fomentation; uſe it with a ſponge according to Art. Alſo after the aforeſaid ſcarification, wee may put Hens, or Turkies that lay egs (which therefore have their fundaments more wide and open, and for the ſame purpoſe put a little ſalt into their fundaments) upon the ſharp top of the *Bubo*, that by ſhutting their *bills* at ſeveral times they may draw and ſuck the venom into their bodies, far more ſtrongly and better then cupping-glaſſes, becauſ they are endued with a natural propertie againſt poiſon, for they eat and concoct Toads, Efts, and ſuch like virulent beaſts: when one Hen is killed with the poiſon that ſhee hath drawn into her bodie, you muſt applie another, and then the third, fourth, fift and ſixt within the ſpace of half an hour. There bee ſom that will rather cut them, or elſ uſe whelps cut aſunder in the mid'ſt, and applied warm unto the place; that by the heat of the creature that is yet ſcarce dead, portion of the venom may bee diſſipated and exhaled. But if nevertheleſs there bee anie fear of a Gangrene at hand, you muſt cut the fleſh with a deeper ſcarification, not onely avoiding the greater veſſels, but alſo the nervs, for fear of convulſion: and after the ſcarification and a ſufficient flux of blood, you muſt waſh it with *Ægyptiacum*, Treacle and Mithridate diſſolved in ſea-water, *aqua vitæ* and Vineger. For ſuch a lotion hath virtue to ſtay putrefaction, repel the venom, and prohibit the blood from concretion: but if the Grangrene cannot bee avoided ſo, cauteries may bee applied to the part: eſpecially actual, becauſ they do more effectually repel the force of the poiſon, and ſtrengthen the part. Preſently after the impreſſion of the hot iron, the Eſchar muſt bee cut away even unto the quick-fleſh, that the venemous vapors and the humors may have a free paſſage forth; for it is not to bee looked for that they will com forth of themſelvs. With theſe inunctions they are wont to haſten the falling away of the Eſchar. Take of the mucilage of marſh-mallows and Lin-ſeeds, of each two ounces; freſh butter, or Hog's-greaſ one ounce; the yelks of three eggs; incorporate them together, and make thereof an ointment: butter, Swines-greaſ, oil of Roſes, with the yelks of eggs, perform the ſelf ſame thing. When the Eſchar is fallen away wee muſt uſe digeſtives. As take of the juice of Plantane, Water-Betonie, and Smallage, of each three ounces; honie of Roſes four ounces; Venice-Turpentine five ounces; Barlie-flower three drams; Aloës two drams; oil of Roſes four ounces; Treacle, half a dram: make a mundificative according to Art. Or, Take of Venice-Turpentine four ounces; ſyrup of dried Roſes and Wormwood, of each an ounce; of the powder of Aloës, Maſtich, Myrrh, Barlie-flower, of each one dram; of Mithridate half an ounce; incorporate them together. This unguent that followeth is verie meet for putrefied and corroding ulcers: Take

When repercuſſives may bee applied.

Why too much bleeding is to bee feared.

Liniments to haſten the falling away of the Eſchar.

Againſt eating ulcers.

Take red Orpiment one ounce; of unquenched Lime, burnt Alum, Pomgranat-pills, of each ſix drams; of *Olibanum*, *Galls*, of each two drams; of Wax and Oil as much as ſhall ſuffice, make thereof an unguent. This doth mundifie ſtrongly, conſume putrefied fleſh, and drie up virulent humidities that engender Gangrenes. But there is not a more exccellent unguent then *Ægyptiacum* increaſed in ſtrength, for beſides manie other virtues that it hath, it doth conſume and waſte the proud fleſh; for there is neither oil nor wax that goeth into the compoſition thereof, with which things the virtue of ſharp medicines convenient for ſuch ulcers, is delaied, and as it were dulled and hindered from their perfect operation ſo long as the ulcer is kept open. There have been manie that beeing diſeaſed with this diſeaſ, have had much matter and venemous filth com out at their abſceſſes; ſo that it ſeemed ſufficient, and they have bin thought well recovered, yet have they died ſuddenly. In the mean while when theſe things are in doing, cordial medicines are not to bee omitted to ſtrengthen the heart. And purgations muſt bee renewed at certain ſeaſons, that nature may bee everie waie unloaded of the burthen of the venenate humors.

The praiſ of *Ægyptiacum.*

## CHAP. XXXII.

*Of the Nature, Cauſſes and Signes of a peſtilent Carbuncle.*

A Peſtilent Carbuncle is a ſmall tumor, or rather a malign puſtle, hot and rageing, conſiſting of blood vitiated by the corruption of the proper ſubſtance. It often commeth to paſs through the occaſion of this untameable malignitie, that the Carbuncle cannot bee governed or contained within the dominion of nature. In the beginning it is ſcarce ſo big as a ſeed or grain of Millet or Peaſ, ſticking firmly unto the part and immoveable, ſo that the skin cannot bee pulled from the fleſh; but ſhortly after it increaſeth like unto a *Bubo* unto a round and ſharp head, with great heat, pricking pain, as if it were with needls, burning and intolerable, eſpecially a little before night, and while the meat is in concocting, more then when it is perfectly concocted. In the mid'ſt thereof appeareth a bladder puffed up and filled with ſanious matter. If you cut this bladder, you ſhall finde the fleſh under it parched, burned and black; as if there had bin a burning cole laid there, whereby it ſeemeth that it took the name of Carbuncle; but the fleſh that is about the place is like a Rain-Bow, of divers colours, as red, dark, geen, purple, livid, and black; but yet alwaies with a ſhineing blackneſs, like unto ſtone-pitch, or like unto the true precious ſtone which they call a *Carbuncle*, whereof ſom alſo ſay it took the name. Som call it a *Nail*, becauſ it inferreth like pain as a nail driven into the fleſh. There are manie Carbuncles which take their beginning with a cruſtie ulcer without a puſtle, like to the burning of a hot iron: and theſe are of a black colour, they increaſ quickly, according to the condition of the matter whereof they are made. All peſtilent Carbuncles have a Fever joined with them, and the grieved part ſeemeth to bee ſo heavie, as if it were covered or preſſed with lead tied hard with a ligature. there commeth mortal ſwounings, faintings, toſſing, turning, idle-talking, rageing, gangrens and mortifications; not onely to the part, but alſo to the whole bodie; by reaſon (as I think) of the oppreſſion of the ſpirits of the part, and the ſuffocation of the naturall heat, as wee ſee alſo in manie that have a peſtilent *Bubo*. For a *Bubo* and Carbuncle are tumors of a near affinitie, ſo that the one doth ſcarce com without the other, conſiſting of one kinde of matter, unleſs that which maketh the *Bubo* is more groſs and clammie, and that which cauſſeth the Carbuncle more ſharp, burning and rageing, by reaſon of its greater ſubtiltie, ſo that it maketh an Eſchar on the place where it is, as wee noted before.

What a Carbuncle is.

The ſigns of a Carbuncle.

When ſo called.

Symptoms of Carbuncles.

How the matter of a *Bubo* and Carbuncle differ.

## CHAP. XXXIII.

*What Prognoſticks may bee made in peſtilent Buboes and Carbuncles.*

Som haveing the peſtilence have but one Carbuncle, and ſom more in divers parts of their bodie, and in manie it happeneth that they have the *Bubo* and Carbuncle before they have anie Fever; which giveth better hope of health, if there bee no other malign accident therewith: for it is a ſign that nature is the victor, and hath gotten the upper-hand, which excluded the peſtilent venom before it could com to aſſault the heart. But if a Carbuncle and *Bubo* com after the Fever, it is mortal; for it is a token that the heart is affected, mooved and incenſed with the furious rage of the venom; whereof preſently commeth a feveriſh heat or burning, and corruption of the humors, ſent as it were from the center unto the ſuperficies of the bodie. It is a good ſign when the patient's minde is not troubled from the beginning untill the ſeventh daie; but when the *Bubo* or Carbuncle ſinketh down again ſhortly after that it is riſen, it is a mortall ſign, eſpecially if ill accidents follow it. If after they are brought to ſuppuration they preſently wax drie without anie reaſon thereof, it is an ill ſign:

Why it is deadlie to have a ſore com after the Fever.

Thoſe

Thoſe Carbuncles that are generated of blood have a greater Eſchar then thoſe that are made of choler; becauſ that blood is of a groſs conſiſtence, and therefore occupieth a greater room in the fleſh: contrariwiſe, a cholerick humor is more ſmall in quantitie and thin, and it taketh little room in the vpper part of the fleſh onely, as you may ſee in an *Eryſipelas*. And I have ſeen Carbuncles whoſe Eſchars were as broad and as large as half the back: alſo I have ſeen others, which going up by the ſhoulders to the throat, did ſo eat away the fleſh that was under them, that the rough arterie or winde-pipe might bee ſeen bare, when the Eſchar was fallen away: I had once a Carbuncle which was in the mid'ſt of my bellie, ſo that when the Eſchar was fallen away, I might verie plainly ſee the *Piritonæum* or Rim: and the cicatrice that remaineth is as broad as my hand: but they do not ſpread themſelvs ſo far without the great danger or death of the patient. There are alſo ſom Carbuncles which beginning at the parts under the chin, diſperſ themſelves by little and little unto the pattel-bones, and ſo ſtrangle the patient. So in manie, the *Buboes* in the groin ariſe above a great part of the muſcles of the *Epigaſtrium*. Truly of thoſe abſceſſes that are ſo large and great in quantitie, and ſo terrible to bee ſeen, there is great danger of death to the patient, or at leaſt to the grived part. For after the conſolidation, the part remaineth as if it were leprous, which aboliſheth the action of the part, as I have ſeen in manie. Oftentimes alſo the corruption of the matter is ſo great, that the fleſh leaveth the bones bare: but Carbuncles often leav the joints and ligaments quite reſolved through the occaſion of the moiſture that is ſoaked and ſunk in unto them; for they often caſt out putrefied and virulent ſanious matter: whereby eating and creeping ulcers are bred, manie bliſters and puſtles ariſing up in the parts round about it; which ſhortly breaking into one, make a great ulcer. Theſe com verie ſeldom and ſlowly unto ſuppuration, or at leaſt to caſt out laudable matter, eſpecially if they have their original of choler; becauſ the matter is ſooner burned with heat, then ſuppurated. Therefore then, if they can bee brought to ſuppuration by no medicines; if the tumor ſtill remain black; if when they are opened, nothing at all, or elſ a verie little ſharp moiſture doth com forth, they are altogether mortal; and there is ſcarce one of a thouſand who hath theſe accidents that recovereth health: diſperſed ſmall bliſters, comming of vapors ſtirred up by the matter that is under the skin, and are there ſtaied and kept from paſſage forth, do not neceſſarily fore-ſhew death in Carbuncles. But if the part bee ſwoln or puffed up, if it bee of a green or black color, and if it feel neither pricking nor burning, it is a ſign of a mortal Gangren. *Buboes* or Carbuncles ſeldom or never com without a Fever: but the Fever is more vehement when they are in the emunctories, or nervous parts, then when they are in the fleſhlie parts, yet it is leſs, and all Symptoms are leſs, and more tolerable in a man that is ſtrong and of a good temperature: Carbuncles not onely affect the outward, but alſo the inward parts, and oftentimes both together. If the heart bee vexed in ſuch ſort with a Carbuncle that nothing thereof appeareth forth on the ſuperficial parts, all hope of life is paſt, and thoſe die ſuddenly, eating, drinking or walking, and not thinking anie thing of death. If the Carbuncle bee in the middriff or lungs, they are ſoon ſuffocated: If it bee in the brain, the patient becommeth frantick, and ſo dieth. If it bee in the parts appointed for the paſſage of the urine, they die of the ſuppreſſion of their water, as it happened in the Queen-mother's waiting maide at the Caſtle of *Roſſilion*, of whom I ſpeak before. If it bee in the ſtomach, it inferreth the accidents that are ſhewed in this hiſtorie following.

Huge peſtilent Abſceſſes commonly deadlie.

Deadlie Carbuncles.

While I was Surgeon in the Hoſpital of Paris, a young and ſtrong Monk of the order of St. *Victor*, beeing overſee'r of the woman that kept the ſick people of that place, fell into a continual Fever verie ſuddenly, with his tongue black, drie, rough, (by reaſon of the putrefied and corrupted humors, and the vapors riſing from the whole bodie unto that place) and hanging out like unto an hound's, with unquenchable thirſt, often ſwounding and deſire to vomit. Hee hath convulſions over all his bodie through the vehemencie and malignitie of the diſeaſ, and ſo hee died the third day: Wherefore thoſe that kept the ſick people in the Hoſpital, thought that hee had been poiſoned, for the certain knowledg whereof the Governors of the Hoſpital commanded his bodie to bee opened.

An hiſtorie.

I therefore calling to mee a Phyſician and Surgeon, wee found in the bottom of his ſtomach a print or impreſſion, as if it had been with an hot Iron or potential Cauterie, with an Eſchar or cruſt as broad as one's nail, all the reſt of his ſtomach was greatly contracted and ſhrunk up together, and as it were hornie; which wee conſidering, and eſpecially the Eſchar which was deep in the ſubſtance of the ſtomach, wee all ſaid with one voice that hee was poiſoned with *Sublimate* or Arſenick. But behold, while I was ſowing up his bellie, I perceived manie black ſpots diſperſed diverſly throughout the skin: then I asked my companie what they thought of thoſe ſpots; truly (ſaid I) it ſeemeth unto mee that they are like unto the purple ſpots or marks that are in the peſtilence. The Phyſician and the Surgeon denied it, and ſaid that they were the biteings of fleas. But I perſwaded them to conſider the number of them over all the whole bodie, and alſo of their great depth and depreſſion into the fleſh; for when wee had thruſt needls deep into the fleſh in the middeſt of them, and ſo cut away the fleſh about the needle, wee found the fleſh about the needle to bee black: moreover his noſtrils, nails, and ears were livid, and all the conſtitution of his bodie was

How to diſtinguiſh purple ſpots from flea-biteings.

was contrarie, and far unlike to the bodies of thoſe that died of other ſickneſſes or diſeaſes. Alſo it was credibly reported unto us by thoſe that kept him, that his face was ſo altered a little before hee died, that his familiar friends could hardly know him. Wee perſwaded by theſe proofs, revoked our former opinion and ſentence, and made a *Certificate* to bee ſent unto the Governors and Maſters of the Hoſpital, ſetting our hands and ſeals unto it, to certifie them that hee died of a peſtilent Carbuncle.

## CHAP. XXXIV.

### *Of the cure of a peſtilent Carbuncle.*

Why emplaſtick, verie hot, and great drawers are not good for a Carbuncle.

BY the fore-named ſigns of a peſtilent Carbuncle, and eſpecially by the bitterneſs of the pain, malignitie of the venemous matter, and by the burning fever that is therewithal annexed, I think it manifeſt, that verie hot, emplaſtick, and drawing medicines ſhould not bee applied to this kinde of tumor; becauſ they prohibit or hinder the exhalation, or waſteing forth of the venenate malignitie; becauſ that by ſtopping the pores of the skin, they increaſ and cauſ a greater heat in the part then there was before. Therefore it is better to uſe reſolving medicines, which may aſſwage heat, and reſolv the pores of the skin. Therefore firſt the place muſt bee fomented with water and oil mixed together, wherein a little Treacle hath been diſſolved, leaving thereon *ſtupes* wet therein: you may alſo uſe the decoction of Mallows, the roots of Lillies, Line-ſeeds, Figs, with oil of *Hypericon*, for to make the skin thin, and to draw forth the matter; and the day following you muſt applie the Cataplaſm following.

A Cataplaſm for a peſtilent Carbuncle.

Another.

Take the leavs of Sorrel and Hen-bane, roſt them under the hot aſhes; afterwards beat them with four yelks of eggs, two drams of Treacle, oil of Lillies, three ounces; Barlie-meal as much as ſhall ſuffice: make thereof a Cataplaſm in the form of a liquid *pultis*; this aſſwageth heat, and furthereth ſuppuration. Or, take the roots of Marſh-mallows and Lillies, of each four ounces; Line-ſeeds half an ounce; boil them, beat them, and then ſtrain them through a cerſ, adding thereto of freſh butter one ounce and an half; of Mithridate one dram; of Barlie-meal as much as ſhall ſuffice: make thereof a Cataplaſm according to art: thoſe Cataplaſms that follow are moſt effectual to draw the venemous matter forth, and to make a perfect ſuppuration, eſpecially when the flux of the matter is not ſo great, but that the part may bear it. Take the roots of white Lillies, Onions, Leaven, of each half an ounce; Muſtard-ſeeds, Pigeon's dung, Sope, of each one dram; ſix Snails in their ſhels; of fine Sugar, Treacle and Mithridate, of each half a dram; beat them altogether, and incorporate them with the yelks of eggs: make thereof a Cataplaſm, and applie it warm. Or, take the yelks of ſix eggs; of ſalt powdered one ounce; of oil of Lillies and Treacle, of each half a dram; Barlie-meal as much as ſhall ſuffice: make thereof a Cataplaſm. Take of ordinarie *Diachylon* four ounces; of *Unguentum Baſilicon* two ounces; oil of Violets half an ounce: make thereof a medicine. Manie antient Profeſſors greatly commend Scabious groun'd, or brayed between two ſtones, and mixed with old Hog's greaſ, the yelks of eggs, and a little ſalt; for it will cauſ ſuppuration in Carbuncles: alſo an egg mixed with Barlie-meal, and oil of Violets doth mitigate pain, and ſuppurate. A Raddiſh-root cut in ſlices, and ſo the ſlices laid one after one unto a Carbuncle or peſtilent Tumor, doth mightily draw out the poiſon. The juice of Colt's-foot doth extinguiſh the heat of Carbuncles. The herb called Divel's-bit, beeing bruiſed, worketh the like effect. I have often uſed the medicine following unto the heat of Carbuncles, with verie good ſucceſs; it doth alſo aſſwage pain, and cauſ ſuppuration. Take of the ſoot ſcraped from a chimnie four ounces, of common ſalt two ounces; beat them into ſmall powder, adding thereto the yelks of two eggs, and ſtir them well together until it com to have the conſiſtence of a *pultis*, and let it bee applied warm unto the Carbuncle. In the beginning, the point or head of the Carbuncle muſt bee burned, if it bee black; by dropping thereinto ſcalding hot oil, or *aqua fortis*: for by ſuch a burning the venom is ſuffocated, as touched by lightening, and the pain is much leſſened, as I have prooved often times: neither is it to bee feared, leſt that this burning ſhould bee too painful, for it toucheth nothing but the point of the Carbuncle, which by reaſon of the Eſchar that is there, is void of ſenſ. After this burning, you muſt go forward with the former-deſcribed medicines, until the Eſchar ſeemeth to ſeparate it ſelf from the fleſh round about it, which is a token of the patient's recoverie; for it ſignifieth that nature is ſtrong and able to reſiſt the poiſon. After the fall of the Eſchar you muſt uſe gentle mundificatives, as thoſe which wee have preſcribed in a peſtilent *Bubo*; not omitting ſomtimes the uſe of ſuppurative and mollifying medicines, that while the groſs matter is cleanſed, that which is as yet crude may bee brought to ſuppuration: for then the indication is twofold; the one to ſuppurate that which remain's as yet crude and raw in the part, and the other to cleanſ that which remain's concocted and perfectly digeſted in the ulcer.

Other Cataplaſms.

The effect of Scabious againſt a peſtilent Carbuncle.

A Raddiſh root draw's out the venom powerfully.

The top of a Carbuncle, when, why, and with what to bee burned.

The falling of the Eſchar promiſeth health.

A twofold indication.

CHAP.

## CHAP. XXXV.

*Of the itching and inflammation happening in peſtilent ulcers, and how to cicatrize them.*

THe parts adjoyning to a peſtilent Ulcer, oft-times are ſuperficiarily excoriated by reaſon of ulcerous puſtles, which here and there with burning and great itching prick and vellicate the part. The cauſ may happen either externally or internally; internally, by a thin and biteing *ſanies*, which ſweating from the Ulcer, moiſten's the neighboring parts. But externally by the conſtipation of the pores of the skin induced by the continual application of medicines. To remedie this, the place muſt bee fomented with diſcuſſing and relaxing things, as *aqua fortis*, which the Gold-ſmiths have uſed for ſeparateing of metals, Alum-water, the water of Lime, Brine, and the like. But Ulcers left by Carbuncles and peſtilent *Bubo's*, are difficultly cicatrized by reaſon of the corrodeing *ſanies*, proceeding from the cholerick, or phlegmatick and ſal't blood, which beeing in fault by the corruption of the whole ſubſtance cauſſeth the abſceſs. Beſides, ſuch Ulcers are commonly round, and therefore hard to bee cicatrized; for that the Quitture hath no free paſſage forth; ſo the *ſanies*, of its own nature acrid and corrodeing, doth by delaie acquire greater acrimonie and introſitie; ſo by its burning touch diſſolving the adjacent fleſh, it hinder's the conjunction and unition of the lips of the Ulcer: but in the *interim*, the lips of the Ulcer becom callous, which, unleſs they bee helped by cutting, or eating medicines, the Ulcer cannot bee healed; for that by their denſitie they hinder the ſweating out of a ſufficient quantitie of the dewie glue to heal up the Ulcer. Now the Ulcer beeing plained and brought equal to the other fleſh, wee muſt uſe Epuloticks, that is, ſuch things as have a facultie to cicatrize Ulcers by condenſing and hardening the ſurface of the fleſh: of theſe there are two kindes; for ſom without much biteing binde and drie: ſuch are Pomegranat-pills, Oak-bark, *Tutia*, Litharge, burn't bones, ſcales of braſs, Galls, Cypreſs-nuts, *Minium*, Antimonie, *Bole-Armenick*, the burn't and waſhed ſhels of Oiſters, Lime nine times waſhed, and manie metalline things. Others are next to theſe, by which proud fleſh is conſumed; but ſuch muſt bee ſpareingly uſed: of this kinde is waſhed Vitriol, burn't Alum, which excelleth other Epuloticks, by reaſon of the excellent drying and aſtringent facultie conſolidateing the fleſh, which by beeing moiſtened by an excrementitious humor, grow's lank. For that the ſcar which is made, is commonly unſightly in this kinde of Ulcers, as red, livid, black, ſwoln, rough, by reaſon of the great aduſtion imprinted in the part, as by a burning cole: therefore I have thought good here to ſet down ſom means, by which this deformitie may bee corrected or amended. If the ſcar bee too big, or high, it ſhall bee plained by makeing convenient ligation and ſtraight bindeing to the part a plate of lead rubbed over with Quick-ſilver; but you may whiten it, by annointing it with Lime nine times waſhed (that ſo it may bee more gentle, and loſe the acrimonie) and incorporated with oil of Roſes. Som take two pound of Tartar or Argole, burn it, and then powder it; put it in a cloth, and ſo let it hang in a moiſt Vault or Cellar, and ſet a veſſel under it to receiv the dropping of liquor, which is good to bee rubbed for a good ſpace upon the ſcar. The ſame facultie is thought to bee in that moiſture of eggs which ſweat's through the ſhell, whil'ſt they are roſted at the coles; as alſo *unguentum citrinum*, and *Emplaſt. de ceruſsâ* newly made. The three following compoſitions are much approoved. ℞. *Axungiæ ſuillæ nonies lotæ in aceto acerrimo* ℥iv. *cinab. ſucci titri, & alum. uſti, an.* ℥ß. *ſulphur. vivi ignem haud experti,* ʒii. *caph.* ℈ii. *fiat pulvis*; then let them all bee incorporated together, and make an ointment: it attenuate's the skin, and cleanſeth ſpots. ℞. *olei hyoſ. olei ſemin. cucurb. an.* ℥i. *olei tartar.* ℥ß. *ceræ alb.* ʒiii. *liquefiant ſimul lento igne; deinde adde ſpermat. ceti* ʒvi. *removeantur prædicta ab igne donec infrigid. poſtea adde troch. alb. Rhaſis pul.* ʒiii. *caph.* ʒi. *tandem cum mali cireï ſucco omnia diligenter commiſce, fiat linimentum.* Or elſ, ℞. *rad. ſerpent.* ℥i. *bulliat in aquâ com.* ℔i. *ad dimid. deinde adde ſulph. vivi ignem non experti, & alum. crudi, pulveriſ. an.* ʒiß. *colcnt. prædict. & addatur caph.* ʒi. *ſucci hyoſcyami* ʒiß. Let this medicine bee kept in a lead or glaſs-veſſel; and when you would uſe it, dip linnen cloaths therein, and lay them to the part. You may alſo uſe theſe medicines againſt the redneſs of the face; and you may fetch them off in the morning, by waſhing the face with warm water and bran.

Why the adjacent parts are troubled with itching.

A fomentation for this itch.

Why theſe Ulcers are hard to bee cicatrized.

Two ſorts of Epuloticks.

Remedies againſt the deformitie of ſcars.

Ointments to attenuate and take away ſcars.

## CHAP. XXXVI.

*Of ſundrie kindes of Evacuations, and firſt of Sweating and Vomiting.*

THe peſtilent malignitie is not onely evacuated and ſent forth by the eruption of puſtles and ſpots, but alſo by ſweat, vomit, bleeding at noſe, at the *hæmorrhoïds*, by the courſes, a flux of the bellie, and other waies; ſo that nature by everie kinde of excretion may bee free'd from the deadlie poiſon, eſpecially that which is not as yet arrived at the heart. But chief regard muſt bee had to the inclination of nature,

Why the peſtilent malignitie is not carried away by one way, but by manie.

Wee must have chief regard to the motion of nature.

ture, and wee must attend what way it chiefly aim's at, and what kinde of excretion it affect's. Yet such evacuations are not alwaies critical, but usually symptomatical; for that oft-times nature is so irritated by the untameable malignity of the matter, that it can no way digest it; but is forced by anie means to send it away crude as it is. Wherefore, if nature may seem by the moistness of the skin, the suppression of urine, and other signs to affect a *crisis* and excretion by sweat, you then shall procure it by the formerly mentioned means. It is delivered by the Antients, that all sweats in acute diseases are salutarie, which happen upon a critical day, which are universal and hot, and signified before the critical day. But in this rapid and deadlie diseas of the Plague, wee must not expect a *Crisis*, but as soon as wee can, and by what means wee may, to free nature from so dire and potent an enemie.

Signs of future sweat.

A *Crisis* must not bee expected in the Plague.

But oft-times the tough and gross excrementitious humors may bee purged by vomit, which could not bee evacuated by strong purges. Therefore also by this manner of excretion may wee hope for the exclusion of the pestilent venom, if there bee nothing which may hinder; and nature by frequent nauseousness may seem to affect this way: the endeavor thereof shall bee helped by giveing som half a pinte of warm water to bee drunk with four ounces of common oil, an ounce of vineger, and a little juice of raddish: after the takeing of the potion, it is fit to thrust into the throat a Goos-quill dipped in the same oil, or elf a branch of Rosemarie; or elf by thrusting in the fingers, so to procure vomit; also a potion of eight ounces of the mucilaginous water of the decoction of Line-seeds will procure vomit. Or elf, ℞. *rad. raph. in taleol. sect. vel sem. ejus, & sem. antriplicis, an.* ℥iii. *bulliant in aquæ com. quod sufficit pro dosi. in colaturâ dissolve oxym. & syr. acet. an.* ℥ß *exhibeatur potio larga & tepida.* Or elf, ℞. *oxym. Gal.* ℥vi. *ol. com.* ℥ii. *paretur potio tepid.* But nature must not bee forc't, unless of its own accord it undertake this motion; for forced and violent vomiting, distend's the nervous fibres of the ventricle, deject's the strength, break's the vessels of the lungs, whence proceed's a deadlie spitting of blood. Wherefore if the stomach shall trouble it self with a vain and hurtful desire to vomit, it shall rather bee strengthened with bags of Roses, Worm-wood, and Sanders, useing inwardly the juice of Quinces and Berberies, and broths made for the same purpose.

How to procure vomit.

Why vomit must not bee forced.

## CHAP. XXXVII.

*Of Spitting, Salivation, Sneesing, Belching, Hicketting, and makeing of Water.*

The effect of spitting in pestilent diseases.

That long evacuations may bee made by Spitting and Salivation, you may learn by the example of such as have a plurisie; for the matter of the plurisie beeing turned into *pus*, the purulent matter suck't up by the rare and spongeous substance of the lungs, and thence drawn into the *aspera arteria*, is lastly cast out by the mouth.

The force of Salivation.

There is none ignorant, how much such as have the *Lues Venerea* are helped by Salivation and Spitting. But these shall bee procured by Masticatorie of the roots of *Ireos*, Pellitorie of Spain, Mastich, and the like; the mucilage of Line-seeds held in the mouth will work the same effect.

The force of Sneesing.

That such as have a moist brain may expel their superfluous humors by sneesing and blowing their noses; the brain, by the strength of the expulsive facultie, beeing stirred up to the exclusion of that which is harmful, may bee known by the example of old people and children which are daily purged by their noses; the brain is stirred up to both kindes of excretion from causes either internal or external: from the internal, as by a phlegmatick and vaporous matter, which contained in the brain, offend's it; externally, as by receiving the beams of the sun in the nostrils, or by tickling them with a feather, or blowing into them the powder of Hellebore, *Euphorbium*, *Pyrethrum*, Mustard-seed, and the like sternutamentories. For then the brain is straightened by its own expulsive facultie, to the excretion of that which is troublous unto it. Sneesing breaketh forth with noise, for that the matter passeth through straights, to wit, by the straining passages of the *Os cribrosum*, which is seated at the roots of the nostrils. It is not fit to cause sneesing in a bodie verie plethorick, unless you have first premised general medicines, lest the humors should bee more powerfully drawn into the brain, and so cause an Apoplexie, *Vertigo*, or the like symptoms.

The commodities of Belching.

By Belching the flatulencies contained in the ventricle, beeing the off-spring of cruditie, or flatulent meats, are expelled; these by their taste and smell, pleasing, stinking, sweet, bitter or tart, shew the condition and kinde of cruditie of the humors from whence they are raised: now vomiting free'th the stomach of crudities, but the distemper must bee corrected by contraries, as altering things to bee prescribed by the Physician.

Hicketting is a contraction and extension of the nervous fibres of the stomach, to cast forth such things as are too contumaciously impact in the coats thereof; yet repletion onely is not the cause thereof, but somtimes inanition also; so oft-times a putrid vapor, from som other place, breaking into the stomach, as from a pestilent *Bubo*, or Carbuncle; also all

acid

aicd and acrid things; becauſe they prick, vellicate and provoke the tunicles of the ventricle, as vineger, ſpiced things, and the like; often and contumacious hicketting after purgeing, a wound or vomiting is ill; but if a convulſion preſently happen thereon, it is deadlie.

Several remedies muſt bee uſed according to the varietie of the cauſſes: for repletion help's that hicketting that proceed's from inanition and evacuation, that which happen's by repletion: that which proceed's from a putrid and venemous vapor, is helped by Treacle and Antidotes; that which is occaſioned by acid and acrid things, is cured by the uſe of groſs, fattie, and cold things.

Now the whole bodie is oft-times purged by urine, and by this way the feveriſh matter is chiefly and properly accuſtomed to bee evacuated: not a few, beeing troubled with the *Lues Venerea*, when as they could not bee brought to ſalivation by unction, have been cured by the large evacuation of urine cauſſed by diuretick medicines. Diureticks, wherewithall you may moov urine, are formerly deſcribed in treating of the ſtone. But wee muſt abſtain from more acrid diureticks, eſpecially when as inflammation is in the bladder; for otherwiſe the noxious humors are ſent to the affected part, whence there is danger of a deadlie Gangrene. Therefore then it is better to uſe diverſion by ſweat.

The whole bodie purged by urine.

When wee ought to abſtain from diureticks.

## CHAP. XXXVIII.

### *Of the* Menſtrual *and* Hæmorrhoidal *purgation.*

NOt onely reaſon, but alſo manifold experience induceth us to beleev, that women, by the benefit of their menſtrual purgation, eſcape, and are free'd from great, peſtilent, and abſolutely deadlie diſeaſes; wherefore it muſt bee procured by remedies, both inwardly taken, and outwardly applied: theſe may bee taken inwardly with good ſucceſs, *Caſſia lignea*, Cinnamon, the *Bark* of the root of a Mulberrie, Safforn, Agrick, Nutmeg, Savine, *Diagridium*, and divers others. But if the affect require more vehement medicines, the roots of Tithymel, Antimonie, *Cantharides* (taken in ſmall quantitie) moov the courſes moſt powerfully; frictions and ligatures made upon the thighs and legs conduce hereto, as alſo cupping in the inner and middle part of the thighs, the opening of the vein *Saphena*, Leeches applied to the orifice of the neck of the womb, peſſaries, nodula's, glyſters, baths, fomentations made of oderiferous things, which by the fragrancie of their odor, or rather by their heat, may attenuate and cut groſs humors, open the obſtructed orifices of the veins; ſuch are the roots of Marſh-mallows, Orris, Parſlie, Fennel, Kneholn, the leavs and flowrs of Saint John's-wurt, *Aſparagus*, *Rocket*, Balm, Chervile, Mug-wurt, Mints, Pennie-royal, Savorie, Roſemarie, *Rue*, *Time*, *Sage*, Bay-berries, Broom, Ginger, Cloves, Pepper, Nutmegs, and the like; the vapor of the boiling whereof, let the woman, ſitting upon a perforated ſeat, receiv by a funnel into the neck of her womb, covering herſelf warm on all ſides, that ſo nothing may otherwiſe break forth. Of the ſame things may bee made baths, as well general, as particular. Alſo peſſaries are good made after this manner. ℞. *theriac. mithrid. an.* ʒß. *caſtor. gum. ammoniac. an.* ʒi. *miſce cum bombace in ſucco mercurialis tincto, fiat peſſarium.* Or elſe, ℞. *rad. petroſelin. & fœnug. ſub cineribus coctas, deinde contuſas cum pul. ſtaphyſag. pyreth. croco & oleo liliorum*, ſo make a peſſarie in the form of a ſuppoſitorie or nodula. Or, ℞. *pulv. myrrh. & aloës, an.* ʒi. *fol. ſabin. nigel. arthewiſ. an* ʒii. *rad. Helleb. nigr.* ʒi. *croci*, ℈i. *cum ſucco mercur. & melle communi:* make a peſſarie iu cotton. This which follow's is more effectual. ℞. *ſucci rut. abſinth. an.* ʒii. *myrrh. euphorb. caſtor. ſabin. diacrid. terebinth. galban. theriac. an.* ʒi. make a peſſarie according to art; let a thred hang out of the one end of the peſſaries, that ſo you may eaſily draw them forth as you pleaſ.

How to provoke the courſes.

How aromatick things provoke the courſes.

Peſſaries to provoke the terms.

But if this menſtruous flux one provoked, flow too immoderately, it muſt bee ſtopped by uſeing meats of groſſer and more viſcid juice, by opening a vein in the arm, application of cupping-glaſſes under the dugs, frictions and ligations of the upper parts, as the arms, putting up of peſſaries, application of refrigerateing and aſtringent plaſters, to the lower bellie, *ſhare* and loins, laying the woman in a convenient place, and not upon a feather-bed.

How to ſtop the courſes flowing too immoderately.

This following injection ſtoppeth the blood flowing out of the womb. ℞. *aquæ plant. & fabror. an.* lbi. *nucum cupreſ. gallar. immatur. an.* ʒii. *berber. ſumach. balauſt. vitriol. rom. alum. roch. an.* ʒii. *bulliant omnia ſimul, & fiat decoctio:* of this make injection into the womb. In the performance of all theſe things, I would have the Surgeon depend upon the advice of a Phyſician, as the occaſion and place ſhall permit.

But if nature endeavor to free it ſelf of the peſtilent matter by the *hæmorrhoides*, you may provoke them by frictions and ſtrong ligatures in the lower parts, as if the thighs or legs were broken, by *ventoſes* applied with great flame to the inner ſide of the thigh, by application of hot and attractive things to the fundament, ſuch as are fomentations, emplaſters, unguents; ſuch as is uſually made of an Onion roſted under the embers, and incorporated with Treacle, and a little oil of *Rue:* after the *hæmorrhoid* veins, by theſe means, com to ſhew themſelvs, they ſhall bee rubbed with rough linnen clothes, or Fig-leavs,

How to provoke the *hæmorrhoids.*

or a raw Onion, or an Ox-gall mixt with ſom powder of *Colloquintida*. Laſtly, you may aplie Horſ-leeches, or you may open them with a lancet, if they hang much forth of the fundament, and bee ſwoln with much blood. But if they flow too immoderately, they may bee ſtai'd by the ſame means as the courſes.

## CHAP. XXXIX.

*Of procureing evacuation by ſtool, or a flux of the bellie.*

NAture often times, both by it ſelf, of its own accord, as alſo helped by laxative and purgeing medicines, caſt's into the bellie and guts, as into the ſink of the bodie, the whole matter of a peſtilent diſeaſ, whence are cauſſed *Diarrhæa's*, *Lienteries*, and *Dyſenteries*; you may diſtinguiſh theſe kindes of fluxes of the bellie, by the evacuated excrements. For if they bee thin and ſincere, that is, retain the nature of one, and that a ſimple humor, as of choler, melancholie, or phlegm; and if they bee caſt forth in a great quantitie, without the ulceration or excoriation of the guts, vehement, or fretting pain, then it is a *Diarrhæa*, which ſom alſo call *fluxus humoralis*. It is called a *Lienteria*, when as by the reſolved retentive facultie of the ſtomach and guts cauſſed by ill humors, either there collected, or flowing from ſom other place; or by a cold and moiſt diſtemper, the meat is caſt forth crude, and almoſt as it was taken. A *Dyſenteria* is, when as manie and different things, and oft-times mixt with blood, are caſt forth with pain, gripeings, and an ulcer of the guts, cauſſed by acrid choler, fretting inſunder the coats of the veſſels.

What a *Diarrhæa* is.

What a *Dyſenteria* is.

But if in anie kinde of diſeaſ, certainly in a peſtilent one, fluxes of the bellie happen immoderate in quantitie, and horrible in the qualitie of their contents, as liquid, viſcous, frothie, as from melted greaſ, yellow, red, purple, green, aſh-colored, black, and exceeding ſtinking. The cauſ is various, and manie ſorts of ill humors, which taken hold of by the peſtilent malignitie, turn into divers *ſpecies*, differing in their whole kinde both from their particular, as alſo from nature in general, by reaſon of the corruption of their proper ſubſtance, whoſe inſeparable ſign is ſtinch, which is oft-times accompanied by worms.

The cauſ of various and ſtinking excrements in the Plague.

An hiſtorie.

In the camp at *Amiens*, a peſtilent *Dyſenterie* was over all the Camp, in this the ſtrongeſt ſouldiers purged forth meer blood: I diſſecting ſom of their dead bodies, obſerved the mouths of the *Meſaraïck* veins and arteries, opened and much ſwollen; and whereas they entered into the guts, were juſt like little *Catyledones*, out of which as I preſſed them, there flowed blood. For both by the exceſſive heat of the Summer's ſun, and the mindes of the enraged ſouldiers, great quantitie of acrid and cholerick humor was generated, and ſo flowed into the bellie: but you ſhall know whether the greater or leſſer guts bee ulcerated, better by the mixture of the blood with the excrements, then by the ſite of the pain; therefore in the one you muſt rather work by glyſters; but in the other, by medicines taken by the mouth.

Therefore, if by gripeings, a *teneſmus*, the murmuring and working of the guts, you ſuſpect in a peſtilent diſeaſ, that nature endeavor's to disburden it ſelf by the lower parts, neither in the mean while doth it ſucceed to your deſire, then muſt it bee helped forward by art, as by takeing a potion of ℥ß. of *hiera ſimplex*, and a dram of *Diaphœnicon* diſſolved in Worm-wood water.

A Potion.

Alſo Glyſters are good in this caſe, not onely for that they aſſwage the gripeings and pains, & draw by continuation or ſucceſſion from the whole bodie; but alſo becauſ they free the *meſaraïck* veins and guts from obſtruction and ſtuffing; ſo that by opening, and as it were unlocking of the paſſages, nature may afterwards more freely free it ſelf from the noxious humors. In ſuch Glyſters they alſo ſomtimes mix two or three drams of Treacle, that by one and the ſame labor they may retund the venenate malignitie of the matter.

There may alſo bee made for the ſame purpoſe Suppoſitories of boiled honie, ℥i. of *hiera picra* and common ſalt, of each ℥ß. or that they may bee the ſtronger, of honie ℥iii. of Ox-gall ℥i. of Scammonie, *Euphorbium*, and *Coloquintida* powdred, of each ℥ß. The want of theſe may bee ſupplied by *Nodula's* made in this form. ℞. *vitell. ovor.* nu. iii. *fellis bubuli*, & *mellis*, *an.* ℥ß. *ſalis com.* ℥ß. let them bee ſtirred together, and well incorporated, and ſo parted into linnen rags, and then bound up into *Nodula's*, of the bigneſs of a Fil-berd, and ſo put up into the fundament; you may make them more acrid, by adding ſom powder of *Euphorbium*, or *Coloquintida*.

Suppoſitories.

## CHAP. XL.

*Of ſtopping the flux of the bellie.*

VIolent and immoderate ſcourings, for that they reſolv the facultie, and lead the patient into a conſumption and death; therefore if they ſhall appear to bee ſuch, they muſt bee

bee ſtaied in time by things taken and injected by the mouth and fundament. To this purpoſe may a pudding bee made of wheat-flowr boiled in the water of the decoction of one Pomegranat, Berberies, *Bole-Armenick*, *Terra ſigillata*, and white Poppie-ſeeds, of each ʒi. The following Almond-milk ſtrengthen's the ſtomach, and mitigate's the acrimonie of the cholerick humor, provoking the guts to excretion. Take ſweet Almonds boiled in the water of Barlie, wherein ſteel or iron hath been quenched; beat them in a marble-mortar, and ſo with ſom of the ſame water make them into an Almond-milk, whereto adding ʒi. of *Diarhodon Abbatis*, you may give it to the patient to drink.

A haſtie pudding to ſtay the lask.

This following medicine I learn't of Dr. *Chappelaine*, the King's chief Phyſician, who received it of his father, and held it as a great ſecret, and was wont to preſcribe it with happie ſucceſ, to his patients. It is thus: ℞. *boli armen. terræ ſigil. lapid. hæmat. an.* ʒi. *picis navalis*, ʒiß. *coral rub. marg. elect. corn. cervi uſt. & loti in aq. plant. an.* ℈i. *ſaccar. roſ.* ʒii. *fiat pulviſc.* Of this let the patient take a ſpoonful before meat, or with the yelk of an egg.

D. *Chappelain's* medicine to ſtay a ſcouring.

*Chriſtopher Andrew* in his *æcoiatria*, much commendeth dog's-dung, when as the dog hath for three daies before been fed onely with bones.

Quinces roſted in embers, or boiled in a pot, the *Conſerv* of Cornelian-cherries, *Preſerved* Berberies and Myrabalans, roſted nutmeg taken before meat, ſtrengthen the ſtomach, and ſtay the lask; the patient muſt feed upon good meats, and theſe rather roſted then boiled. His drink ſhall bee *calibeate*-water of the decoction of a ſowr Pomegranat beaten, or of the decoction of a Quince, Medlars, Cervices, Mulberries, Bramble-berries, and the like things, endued with a facultie to binde and waſte the excrementitious humidities of the bodie: theſe waters ſhall bee mixed with ſyrup of red Currants, julip of Roſes, and the like.

Drink.

Let the region of the ſtomach and bellie bee annointed with oil of Maſtich, *Moſchatelinum*, Myrtles, and Quinces. Alſo a cruſt of bread newly drawn forth of the oven, and ſteeped in vineger and Roſe-water, may bee profitably applied; or elſ a cataplaſm of red Roſes, Sumach, Berberies, Myrtles, the pulp of Quinces, Maſtich, Bean-flowr, and honie of Roſes made up with *calibeate*-water.

Ointments.

Anodyne, abſtergent, aſtringent, conſolidateing and nouriſhing glyſters ſhall bee injected. Theſe following retund the acrimonie of humors, and aſſwage pain. ℞. *fol. lactuc. hyoſc. acetoſ. portul. an.* m.i. *flor. violar. & nenuph. an.* ʒiß. *fiat clyſter.* Or elſ, ℞. *roſ. rub. hord. mund. ſem. plant. an.* p.i. *fiat decoctio, in colaturâ adde olei roſ.* ʒii. *vitel. ovor.* ii. *fiat clyſter.* Or, ℞. *decoctionis capi, crur. vitellin. & capit. vervicin. unà cum pelle,* ℔.ii. *in quâ coquantur fol. violar. malv. mercur. plantag. an.* m.i. *hord. mund.* ʒi. *quatuor ſem. frigid. major. an.* ʒß. *in colaturæ* ℔ß. *diſſolve caſſ. recenter extract.* ʒi. *ol. viol.* ʒiv. *vitellor. ovor.* ii. *facc. rub.* ʒi. *fiat clyſter.* Or, ℞. *flor. chamæm. melil. aneth. an.* p.i. *rad. biſmal.* ʒi. *fiat decoctio in lacte; colaturæ adde mucag. ſem. lin. fænagr. extract. in aquâ malv.* ʒii. *ſaccar. rub.* ʒi. *olei cham. & aneth. an.* ʒiß. *vitellor. ovor.* ii. *fiat clyſter.*

Glyſter to ſtay a flux.

Such glyſters muſt bee long kept, that they may more readily mitigate pain. When ſhavings of the guts appear in the ſtools, it is an argument that there is an ulcer in the guts; therefore then wee muſt uſe detergent and conſolidateing glyſters, as this which follow's.

℞. *hordei integr.* p.ii. *roſ. rub. flor. chamæm. plantag. apii, an.* p.i. *fiat decoctio, in colaturâ diſſolve mellis roſat. & ſyr. de abſinth. an* ʒiß. *vitel. ovor.* ii. This following glyſter conſolidateth. ℞. *ſucci plantag. centinod & portulac.* nu. ʒii. *bol armen. ſang. dracon. amyl. an.* ʒi. *ſebi hircini diſſoluti,* ʒiii. *fiat clyſter.* Alſo Cow's-milk boiled with Plantain, and mixed with ſyrup of Roſes, is an excellent medicine for the ulcerated guts.

A glyſter for ulcerated guts.

This following glyſter binde's. ℞. *cand. equin. plant. polygon. an.* m.i. *fiat decoctio in lacte uſtulato ad* quart. iii. *& in colaturâ adde boli armen. ſigil. ſang. dracon. an.* ʒii. *albumina duor. ovor. fiat clyſter.* Or elſ, ℞. *ſuc. plant. arnogloſ. centinod. portulac. reſidentia facta depuratorum quantum ſufficit pro clyſtere, addendo pul. boli armeni, terræ ſigil. ſang. dracon. an.* ʒi. *ol. myrthin. & roſat. an.* ʒii. *fiat clyſter.*

A verie aſtringent glyſter.

If pure blood flow forth of the guts, I could wiſh you to uſe ſtronger aſtrictives. To which purpoſe I much commend a decoction of Pomegranat-pills, of Cypreſs-nuts, red Roſe leavs, Sumach, and Alum, and Vitriol made with Smith's water; and ſo made into glyſters, without anie oil. It will bee good with the ſame decoction to foment the fundament, *perinæum*, and the whole bellie.

Aſtringent glyſters ought not to bee uſed before that the noxious humors bee drawn away, and purged by purgeing medicines, otherwiſe by the ſtoppage hereof, the bodie may chance to bee oppreſſed.

If the patient bee ſo weak, that hee cannot take or ſwallow anie thing by mouth, nutritive glyſters ſhall bee given him. ℞. *decoctionis capi pinguis, & crur. vitulini, coct. cum acetoſâ, bugloſſo, boragine, pimpinellâ, lactucâ,* ʒx. *vel* xii. *in quibus diſſolve vitellos ovorum,* nu. iii. *ſaccari roſati, & aquæ vitæ, an.* ʒi. *butyri recentis non ſaliti,* ʒii *fiat clyſter.*

A nouriſhing glyſter.

## CHAP. XLI.

*Of evacuation by insensible transpiration.*

THe pestilent malignitie, as it is oftimes drawn by the pores, by transpiration into the bodie, so oftimes it is sent forth invisibly the same way again. For our native heat, that is never idle in us, dispersеth the noxious humors, attenuated into vapors and air through the unperceivable breathing-places of the skin. An argument hereof is, wee see that the tumors and abscesses against nature, even when they are com to suppuration, are oftimes resolved and discussed by the onely efficacie of nature, and heat, without anie help of art. Therefore there is no doubt, but that nature, beeing prevalent, may free it self from the pestilent malignitie by transpiration, som Abscess, *Bubo*, or Carbuncle beeing com forth, and som matter collected in som certain part of the bodie. For when as nature and the native heat are powerful and strong, nothing is impossible to it, especially when the passages are also in like manner free and open.

Tumors are oftimes discussed by the force of nature after they are suppurated.

## CHAP. XLII.

*How to cure Infants and Children taken with the Plague.*

IF that it happen that sucking or weaned children bee infected with the pestilence, they must bee cured after another order then is yet described. The Nurse of the sucking childe must govern her self so in diet and the use of medicines, as if shee were infected with the pestilence her self: Her diet consisteth in the use of the six things *not natural*. Therefore let it bee moderate; for the fruit or profit of that moderation in diet cannot chuse but com unto the Nurses milk, and so unto the Infant that liveth by the milk. And the Infant it self must keep the same diet as near as hee can in sleep, wakeing, and expulsion, or avoiding of superfluous humors and excrements of the bodie. Let the Nurse bee fed with those things that mitigate the violence of the feverish heat: as cooling broths, cooling herbs, and meats of a moderate temperature: shee must wholly abstain from wine, and annoint her nipples, as often as shee giveth the Infant suck, with water, or juice of Sorrel, tempered with Sugar of Roses. But the Infants heart must bee fortified against the violence of the increasing venom, by giveing it one scruple of Treacle in the Nurse's milk, the broth of a Pullet, or som other cordial water. It is also verie necessarie to annoint the region of the heart, the emunctories, and both the wrists with the same medicine: neither were it unprofitable to smell often unto Treacle dissolved in Rose-water, vineger of Roses, and a little *Aqua vitæ*, that so nature may bee strengthened against the malignitie of the venom. When the children are weaned, and somwhat well grown, they may take medicines by the mouth; for when they are able to concoct and turn into blood meats that are more gross and firm then milk, they may easily actuate a gentle medicine. Therefore a potion must bee prepared for them of twelv grains of Treacle, dissolved with a little of the syrup of Succorie in som cordial water, or the broth of a Capon: unless that anie had rather give it with *Conserv.* of Roses, in form of a bole: but Treacle must bee given to children in verie small quantitie, for if it bee taken in anie large quantitie, there is great danger, lest that by inflameing the humors, it infer a fever. Furthermore, broth may bee prepared to bee taken often, made of a Capon seasoned with Sorrel, Lettuce, Purslain and cooling seeds, adding thereto *Bole-Armenick*, and *Terra sigillata*, of each one ounce, beeing tied in a rag, and somtimes pressed out from the decoction. For *Bole-Armenick*, whether it bee by its marvellous facultie of drying, or by som hidden propertie, hath this virtue, that beeing drunken (according as *Galen* witnesseth) it cureth those that are infected with the pestilence, if so bee that they may bee cured by physick; so that those that cannot bee cured with *Bole-Armenick*, cannot bee preserved by anie other medicines. But becaus the bodies of children are warm, moist and vaporous, they are easily delivered of som portion of the venenate matter through the pores of the skin by provokeing sweat, with a decoction of Parslie-seeds, Prunes, Figs, and the roots of Sorrel, with a little of the powder of Hart's-horn, or Ivorie. But that the sweat may bee more abundant and copious, applie sponges dipped and pressed out in the hot decoction of *Sage*, Rosemarie, Lavender, Bays, Cammomil, Melilot and Mallows, or elſ Swine's bladders half filled with the same decoction, to the arm-holes, and to the groins. In the time that they sweat, let their faces bee fanned to cool them. Also let a nodule of Treacle, dissolved in vineger and water of Roses, bee applied to the nostrils; but alwaies use a moderation in sweating, becaus that children are of a substance that is easie to bee dissipated and resolved: so that oftentimes although they do not sweat, yet they feel the commodities

The nurse must bee dieted when as the childe is sick.

Medicines may bee given to such as are weaned.

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The benefit of children.

modities of ſweating, the matter of the venom beeing diſſipated by the force of the heat through the pores of the skin. But in the ſweating, while the face is fanned, and ſweet and cordial things applied to the noſtrils, nature muſt bee recreated and ſtrengthened, which otherwiſe would bee debilitated through ſweating, that it may bee better able to expel the venom. After that the ſweat is wiped away, it is verie profitable to take a potion of *Conſerv* of Roſes, with the powder of Hart's-horn, or of Ivorie diſſolved in the waters of Bugloſs and Sorrel, the better to cool and defend the heart. If there appear anie tumor under the arm-holes, or in the groin, let it bee brought to maturation with a mollifying, relaxing, drawing, and then with a ſuppurative fomentation, or cataplaſm; alwaies uſeing and handling it as gently as you may, conſidering the tender age of the Infant. If you have need to purge the patient, the purgation following may bee preſcribed with great profit. Take of Rubarb in powder one dram; infuſe it in the water of *Carduus Benedictus*, with one ſcruple of Cinnamon; in the ſtraining diſſolv two drams of *Diacatholicon*; of ſyrup of Roſes laxative three drams; make thereof a ſmall potion. This is the cure of the Peſtilence, and of the peſtilent Fever, as far as I could learn from the moſt learned Phyſicians, and have obſerved my ſelf by manifold experience by the grace and permiſſion of God: of whom alone, as the Autor of all good things that mortal men enjoy, the true and certain preſervatives againſt the Peſtilence, are to bee deſired and hoped for.

The form of a purge to bee given to a childe.

*The end of the twentie ſecond Book.*

OF

# Of the Means and Manner to repair or ſupplie the natural or accidental defects or wants in Man's bodie.

## *The twentie third Book.*

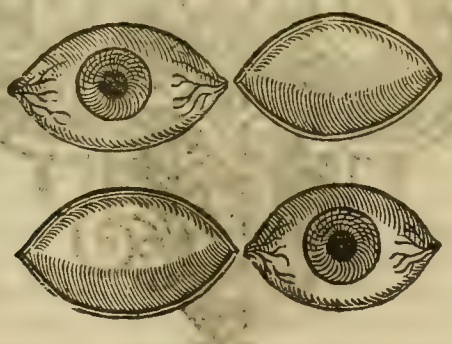
### CHAP. I.

*How the loſs of the natural or true eie may bee covered, hidden or ſhadowed.*

The fourth dutie of a Surgeon.

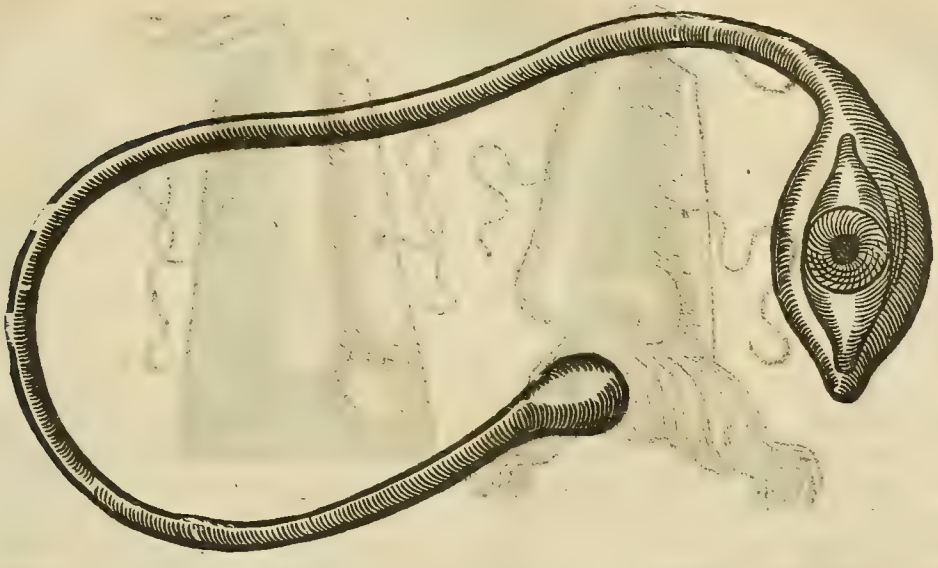
HAveing at large treated in the former Books of Tumors, Wounds, Ulcers, Fractures and Luxations, by what means things diſſolved and diſlocated might bee united, things united ſeparated, and ſuperfluities conſumed or abated: Now it remain's, that wee ſpeak of the fourth office or dutie of the Chirurgion, which is to ſupplie or repair thoſe things that are wanting by nature, through the default of the firſt conformation, or afterwards by ſom miſchance. Therefore, if that through anie miſchance, as by anie inflammation, anie man's eie happen to bee broken or put out, and the humors ſpilt or waſted; or if it bee ſtrucken out of his place or cavitie wherein it was naturally placed by anie violent ſtroke; or if it waſte or conſume by reaſon of a conſumption of the proper ſubſtance, then there is no hope to reſtore the ſight or function of the eie, yet you may cover the deformitie of the eie ſo loſt (which is all you can do in ſuch a caſe) by this means: If that when you have perfectly cured and healed the ulcer, you may put another eie artificially made of gold or ſilver, counterfeited and enamelled, ſo that it may ſeem to have the brightneſs, or gemmie decencie of the natural eie, into the place of the eie that is ſo loſt.

*The forms of eies artificially made of gold or ſilver, poliſhed and enameled, ſhewing both the inner and outer ſide.*



But if the patient bee unwilling, or by reaſon of ſom other means cannot wear this eie ſo prepared, in his head; you may make another on this wiſe. You muſt have a ſtring or wier of iron bowed or crooked, like unto women's ear-wiers, made to binde the head harder or looſer, as it pleaſeth the patient, from the lower part of the head behinde above the ear, unto the greater corner of the eie; this rod or wier muſt bee covered with ſilk; and it muſt alſo bee ſomwhat broad at both ends, leſt that the ſharpneſs thereof ſhould pierce or prick anie part that it commeth unto. But that end wherewith the emptie hollowneſs muſt bee covered, ought to bee broader then the other, and covered with a thin piece of leather, that thereon the colors of the eie that is loſt may bee ſhadowed or counterfeited. Here followeth the figure or portraiture of ſuch a ſtring or wier.

*The form of an iron wier wherewith the deformitie of an eie that is loſt may bee ſhadowed or covered.*



## CHAP. II.

*By what means a part of the Noſe that is cut off, may bee reſtored; or how in ſtead of the noſe that is cut off, another counterfeit noſe may bee faſtened, or placed in the ſtead.*

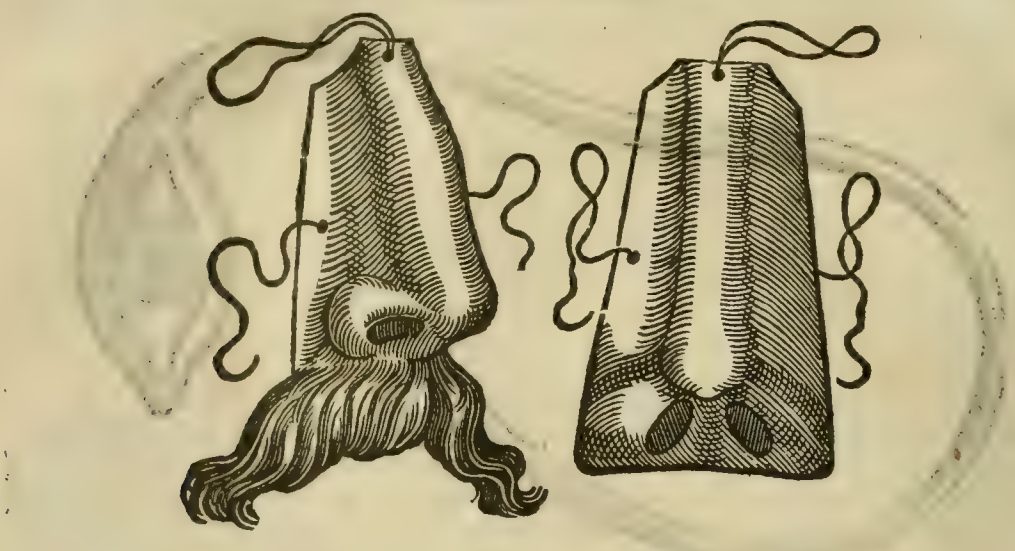
WHen the whole Noſe is cut off from the face, or portion of the noſtrils, from the Noſe, it cannot bee reſtored or joyned again; for it is not in men, as it is in plants. For plants have a weak and feeble heat; and furthermore, it is equally diſperſed into all the ſubſtance of the plant or tree, neither is it eaſie to bee conſumed or waſted: for when the boughs or branches of trees are broken, torn, or cut away, they live nevertheleſs, and will grow again when they are ſet and grafted; neither is there anie ſeat for the heart rightly prepared in them from whence the heat muſt neceſſarily run, and diſperſ it ſelf continually into all the parts thereof. But contrariwiſe, the ſeparated parts of more perfect living creatures, as of men, are incontinently deprived of life; becauſ they have their nouriſhment, life, ſenſ, and whole ſuſtentation not of themſelvs, by faculties flowing or comming unto them from ſom other parts; neither are they governed by their own heat, as plants, but by a borrowed heat: ſo that above or beſide the natural facultie of the liver, another vital facultie commeth unto it from the heart.

Why the parts of plants bee-ing cut off, may grow a-gain, but thoſe of man can-not.

Wherefore in ſtead of the Noſe cut away or conſumed, it is requiſite to ſubſtitute another made by art; becauſ that nature cannot ſupplie that defect: this Noſe ſo artificially made, muſt bee of gold, ſilver, paper, or linnen clothes glewed together, it muſt bee ſo colored, counterfeited, and made both of faſhion, figure and bigneſs, that it may as aptly as is poſſible, reſemble the natural Noſe: it muſt bee bound or ſtayed with little threds or laces unto the hinder part part of the head or the hat. Alſo if there bee anie portion of the upper lip cut off with the noſe, you may ſhadow it with annexing ſom ſuch thing that is wanting unto the noſe, and cover it with the hair on his upper lip, that hee may not want anie thing that may adorn or beautifie the face. Therefore I have thought it neceſſarie to ſet down the figure or form of both theſe kindes.

*The*

*The form of a noſe artificially made, both alone by it ſelf, and alſo with the upper-lip covered as it were with the hair of the beard,*



A ſtrange cure for a cut-off noſe.

There was a Surgeon of Italie of late years which would reſtore or repair the portion of the noſe that was cut away after this manner. Hee firſt ſcarified the callous edges of the maimed noſe round about, as is uſually don in the cure of hare-lips: then hee made a gaſh or cavitie in the muſcle of the arm, which is called *Biceps*, as large as the greatneſs of the portion of the noſe which was cut away did require: and into that gaſh or cavitie ſo made, hee would put that part of the noſe ſo wounded, and binde the patient's head to his arm, as if it were to a poſt, ſo faſt that it might remain firm, ſtable and immoveable, and not lean or bow anie way; and about fortie daies after, or at that time when hee judged the fleſh of the noſe was perfectly agglutinated with the fleſh of the arm; hee cut out as much of the fleſh of the arm, cleaving faſt unto the noſe, as was ſufficient to ſupplie the defect of that which was loſt, aud then hee would make it even, and bring it, as by licking, to the faſhion and form of a noſe, as near as art would permit; and in the mean while hee did feed his patient with panadoes, gellies and all ſuch things as were eaſie to bee ſwallowed and digeſted. And hee did this work of cureing the place where the fleſh was ſo cut out, onely with certain balms and agglutinative liquors. A younger brother of the familie of St. *Thoan*, beeing wearie of a ſilver-noſe, which beeing artificially made, hee had worn in the place of his noſe that was cut off, went to this Chirurgian into Italie, and by the mean fore-named practice hee recovered a noſe of fleſh again, to the great admiration of all thoſe that knew him before. This thing truly is poſſible to bee don, cut it is verie difficult both to the patient ſuffering, and alſo to the Chirurgian working. For that the fleſh that is taken out of the arm is not of the like temperature as the fleſh of the noſe is; alſo the holes of the reſtored noſe cannot bee made as the were before.

An hiſtorie.

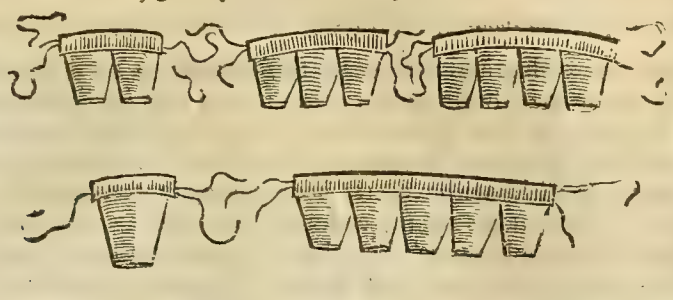
## CHAP. III.

*Of the placeing of Teeth artificially made in ſtead of thoſe that are loſt or wanting.*

IT oftentimes happeneth that the fore-teeth are mooved, broken or ſtricken out of their places by ſom violent blow, which cauſſeth deformitie of the mouth, and hinder's plain pronunciation. Therefore when the jaw is reſtored (if it were luxated or fractured) and the gums brought into their former hardneſs; other teeth artificially made of bone or Ivorie may bee put in the place of thoſe that are wanting, and they muſt bee joined one faſt unto another, and alſo ſo faſtned unto the natural teeth adjoining, that are whole; and this muſt chiefly bee don with a thred of gold or ſilver, or for want of either, with a common thred of ſilk or flax, as it is declared at large by *Hippocrates*, and alſo deſcribed in this figure following.

*Sect. 2. lib. de art. ſent. 25.*

*The figure of Teeth bound or faſtned together.*



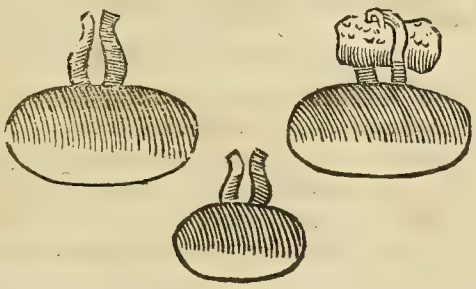
## CHAP. IIII.

*Of filling the hollowneſs of the Palat.*

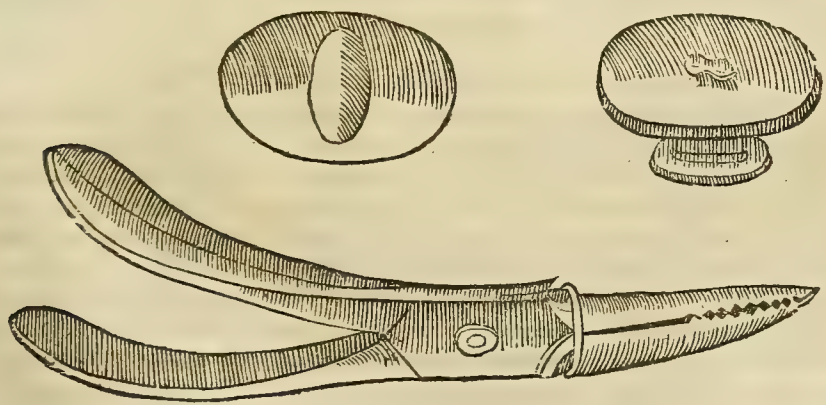
The cauſſes and hurt that enſue's of the loſt palat.

MAnie times it happeneth that a portion or part of the bone of the Palat, bee-ing broken with the ſhot of a gun, or corroded by the virulencie of the *Lues Venerea*, fall's away, which make's the patients, to whom this happeneth, that they cannot pronounce their words diſtinctly, but obſcurely, and ſnuffling: therefore I have thought it a thing worthie the labor to ſhew the means how it may bee helped by art. It muſt bee don by filling the cavitie of the Palat with a plate of gold or ſilver, a little bigger then the cavitie it ſelf is. But it muſt bee as thick as a French Crown, and made like unto a diſh in figure; and on the upper ſide, which ſhall bee towards the brain, a little ſponge muſt bee faſtened, which, when it is moiſtened with the moiſture diſtilling from the brain, will becom more ſwoln, and puffed up; ſo that it will fill the concavitie of the Palat, that the artificial Palat cannot fall down, but ſtand faſt and firm, as if it ſtood of it ſelf. This is the true figure of thoſe inſtruments, whoſe certain uſe I have obſerved not by once or twice, but by manifold trials in the battels fought beyond the Alps.

*The figure of plates to fill or ſupplie the defects of the Palat.*



*The figure of another plate for the Palat, on whoſe upper ſide there is a button, which may bee turned when it is put into the place, with a ſmall Raven's bill, like this whoſe figure is here expreſſed.*



CHAP.

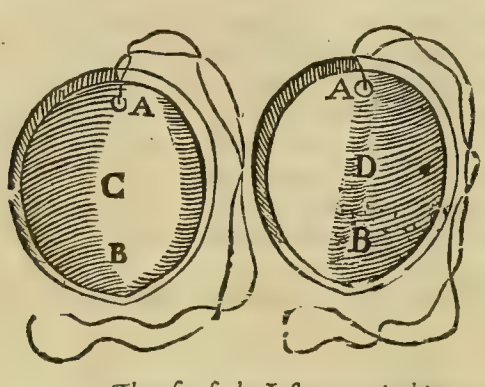
## CHAP. V.

*How to help ſuch as cannot ſpeak by reaſon of the loſs of ſom part of the tongue.*

A remedie found out by accident. An hiſtorie.

CHance gave place and autoritie to this remedie, as to manie other in our Art. A certain man dwelling in a village named *Yvoy le Chæſteau*, beeing ſom twentie four miles from *Bourges*, had a great piece of his tongue cut off; by which occaſion hee remain'd dumb ſom three years. It happen'd on a time that as hee was in the fields with reapers, hee drinking in a wooden diſh, was tickled by ſom of the ſtanders by, not endureing the tickling, hee ſuddenly broke out into articulate and intelligible words. Hee himſelf wondring thereat, and delighted with the noveltie of the thing, as a miracle, put the ſame diſh to his mouth juſt in the ſame manner as before, and then hee ſpake ſo plainly and articulately, that hee might bee underſtood by them all. Wherefore a long time following hee alwaies carried this diſh in his boſom, to utter his minde, until at length neceſſitie, the miſtreſs of arts, and giver of wit induceing him, hee cauſſed a wooden inſtrument to bee neatly cut and made for him, like the which is here delineated, which hee alwaies carried hanging at his neck, as the onely interpreter of his minde, and the key of his ſpeech.

*An inſtrument made to ſupplie the defect of the ſpeech when the tongue is cut off.*




*The uſe of the Inſtrument is this.*

A. ſheweth the upper part of it which was of the thickneſs of a nine-pence, which hee did ſo hold between his cutting teeth, that it could not com out of his mouth nor bee ſeen. B. ſheweth the lower part, as thick as a ſix-pence, which hee did put hard to the reſt of his tongue, cloſe to the membranous ligament which is under the tongue. That place which is depreſt and ſomwhat hollowed, marked with the letter C. is the inner part of the inſtrument. D. ſheweth the outſide of the ſame. Hee hanged it about his neck with the ſtring that is tied thereto.

*Textor* the Phyſician of Bourges ſhewed mee this inſtrument: and I my ſelf made trial thereof on a young man whoſe tongue was cut off, and it ſucceeded well, and took verie good effect. And I think other Surgeons in ſuch caſes may do the like.

## CHAP. VI.

*Of covering or repairing certain defects or defaults in the face.*

IT oftentimes happeneth, that the face is deformed by the ſudden flaſhing of Gun-powder, or by a peſtilent Carbuncle, ſo that one cannot behold it without great horror. Such perſons muſt bee ſo trimmed and ordered, that they may com in ſeemlie manner into the companie of others. The lips if they bee either cut off with a ſword, or deformed with the eroſion or eating of a peſtilent Carbuncle or ulcerated *Cancer*, ſo that the teeth may bee ſeen to lie bare with great deformitie. If the loſs or conſumption of the lip bee not verie great, it may bee repaired by that waie which wee have preſcribed in the cure of hare-lips, or of an ulcerated *Cancer*. But if it bee great, then muſt there bee a lip of gold made for it, ſo ſhadowed and counterfeited, that it may not bee much unlike in color to the natural lip, and it muſt bee faſtned and tied to the hat or cap that the patient weareth on his head, that ſo it may remain ſtable and firm.

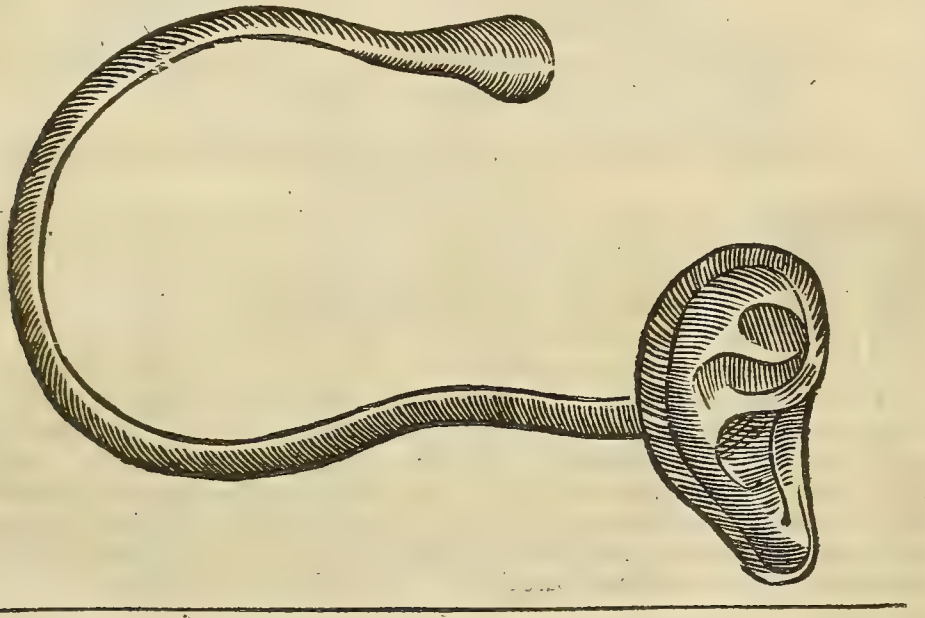
CHAP.

## CHAP. VII.

*Of the defects of the Ears.*

SUch as want their Ears, either naturally or by misfortune, as through a wound, carbuncle, cancer, or the biteing of wilde beasts: if so bee that the Ear bee not wholly wanting, wasted, consumed, or torn away; but that som portion thereof doth yet remain, then must it not bee neglected, but must have manie holes made therein with a bodkin; and after that the holes are cicatrized, let som convenient thing, made like unto the piece of the Ear that is lost, bee tied or fastned unto it by these holes.

But if the Ear bee wholly wanting, another must bee made of paper artificially glewed together, or elſ of leather, and so fastened with laces, from the top or hinder part of the head, that it may stand in the appointed place; and so the hair must bee permitted to grow long, or elſ som cap worn under the hat, which may hide or cover the deformitie, unleſs you had rather have it to bee shadowed or counterfeited by som Painter, that thereby it may resemble the color of a natural Ear; and so retain in it the place where it ought to stand, with a rod or wier comming from the top or hinder part of the head, as wee have spoken before in the loss of the Eie; and the form thereof is this.



## CHAP. VIII.

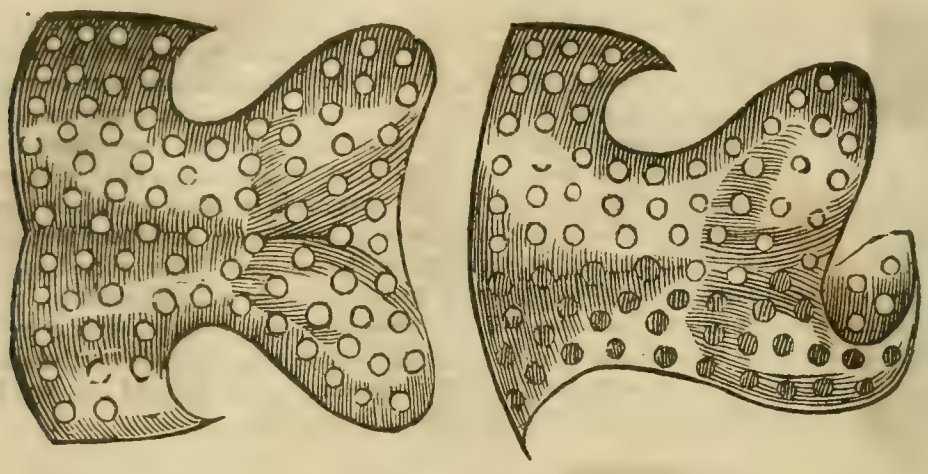
*Of amending the deformitie of such as are crook-back't.*

THe bodies of manie, especially young maids or girls (by reason that they are more moist and tender then the bodies of boys) are made crooked in process of time, especially by the wrenching aside and crookedness of the back-bone. It hath manie causſes, that is to say, in the first conformation in the womb, and afterwards by misfortune; as a fall, bruiſ, or anie such like accident; but especially by the unhandsom and undecent situation of their bodies, when they are young and tender, either in carrying, sitting or standing (and especially, when they are taught to go too soon) saluting, sewing, writeing, or in doing anie such like thing. Causſes of crookedneſs.

In the mean while, that I may not omit the occasion of crookedneſs, that happen's seldom to the Countrie-people, but is much incident to the inhabitants of great Towns and Cities, which is by reason of the straightneſs and narrowneſs of the garments that are worn by them, which is occasioned by the follie of mothers, who while they covet to have their young daughters bodies so small in the middle as may bee possible, pluck and draw their bones awrie, and make them crooked. For the ligaments of the back-bone beeing verie tender, soft and moist at that age, cannot stay it straight, and strongly; but beeing pliant, easily permit's the spondels to slip awrie inwards, outwards, or side-wise, as they are thrust or forced.

The remedie for this deformitie is to have breast-plates of iron, full of holes all over them, whereby they may bee lighter to wear; and they must bee so lined with bombaste, that they may hurt no place of the bodie. Everie three months new plates must bee made for those that are not yet arrived at their full growth; for otherwise by the dailie afflux of more matter, they would becom worſ. But these plates will do them small good that are alreadie at their full growth.

*The form of an iron Breaſt-plate, to amend the crookedneſs of the Bodie.*



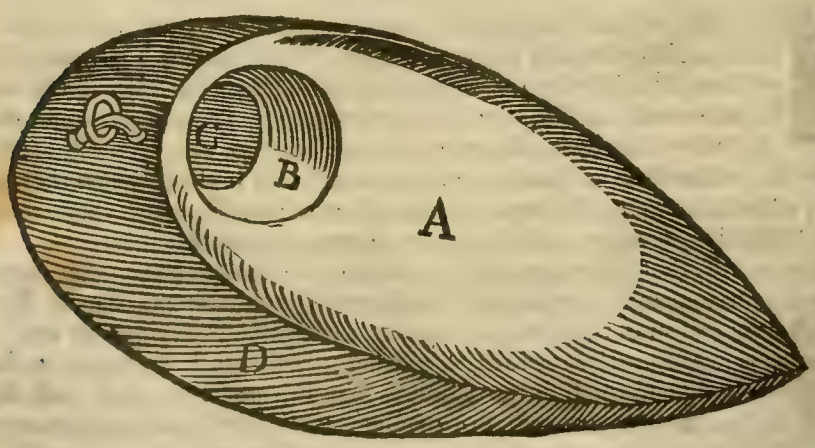
## CHAP. IX.

*How to reliev ſuch as have their urine flow from them againſt their wils, and ſuch as want their yards.*

IN thoſe that have the Strangurie, of what cauſ ſoever that maladie com meth, the urine paſſeth from them by drops, againſt their wils and conſent. This accident is verie grievous and troubleſom, eſpecially to men that travell: and for their ſakes onely I have invented the inſtrument here beneath deſcribed. It is made like unto a cloſe breech or hoſe; it muſt bee of latin, and to contain ſom four ounces: it muſt bee put into the patient's hoſe, between his thighs, unto which it muſt bee tied with a point by the ring. Into the open and hollow mouth of this inſtrument, which is noted with the letter C. the patient muſt put his yard; and into this concavitie or hollowneſs goeth a ſtay ſomwhat deep, it is marked with the letter B. and made or placed there, both to hold or bear the end of the yard, and alſo by his cloſe joint that it muſt have unto the veſſel, to ſtay the urine from going back again, when it is once in. But the letters A. and D. do ſignifie all the inſtrument; that the former part, and this the hinder part thereof. Now this is the ſhape thereof.

An inſtrument for ſuch as cannot hold their water.

*The figure of an Inſtrument, which you may call,* A Baſin, *or Receptacle for the Urine.*

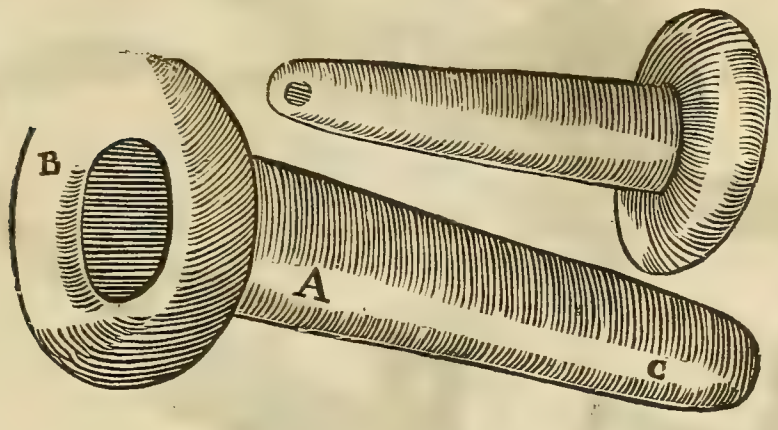



Thoſe that have their yards cut off cloſe to their bellies, are greatly troubled in makeing of urine, ſo that they are conſtrained to ſit down like women, for their eaſ. I have deviſed this pipe or conduit, haveing an hole through it as big as one finger, which may bee made of wood, or rather of latin.

A. and C. do ſhew the bigneſs and length of the pipe. B. ſheweth the brink on the broader end. D. ſheweth the out-ſide of the brink. This Inſtrument muſt bee applied to the lower

lower part of *os pectinis*: on the upper end it is compaſſed with a brink for the paſſage of the urine, for thereby it will receiv the urine better, and carrie it from the patient, as hee ſtandeth upright.

*The deſcription of a pipe or conduit, ſerving in ſtead of the yard in makeing of water, which therefore wee may call an artificiall yard.*




## CHAP. X.

*By what means the periſhed function or action of a thumb or finger may bee corrected and amended.*

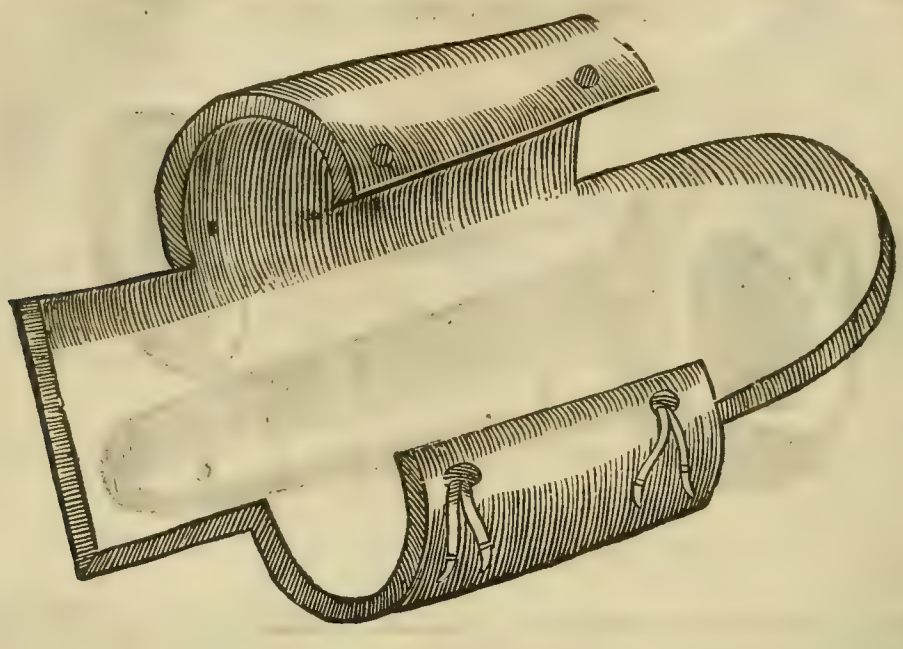
WHen a ſinew or tendon is cut clean aſunder, the action in that part, whereof it was the author, is altogether aboliſhed; ſo that the member cannot bend or ſtretch out it ſelf, unleſs it bee holpen by art: which thing I performed in a certain Gentleman belonging to *Annas* of *Montmorencie*, General of the French Horſ-men, who in the battle of *Dreux* received ſo great a wound with a back-ſword, upon the out-ſide of the wriſt of the right hand, that the tendons that did erect or draw up the thumb were cut clean in ſunder; and alſo, when the wound was throughly whole and conſolidated, the thumb was bowed inwards, and fell into the palm of the hand, ſo that hee could not extend or lift it up, unleſs it were by the help of the other hand, and then it would preſently fall down again; by reaſon whereof hee could hold neither ſword, ſpear, nor javelin in his hand, ſo that hee was altogether unprofitable for war, without which hee ſuppoſed there was no life. Wherefore hee conſulted with mee about the cutting away of his thumb, which did hinder his gripeing, which I refuſed to do, and told him, that I conceived a means how it might bee remedied without cutting away. Therefore I cauſſed a caſe to bee made for it of latin, whereinto I put the thumb: this caſe was ſo artificially faſtened by two ſtrings that were put into two rings, made in it above the joint of the hand, that the thumb ſtood upright, and ſtraight out, by reaſon whereof hee was able afterwards to handle anie kinde of weapon. An hiſtorie.

*The form of a thumb or finger-ſtall of iron or latin, to lift up or erect the thumb, or anie other finger that cannot bee erected of it ſelf.*

If that in anie man the ſinews or tendons, which hold the hand upright, bee cut aſunder with a wound, ſo that hee is not able to lift up his hand, it may eaſily bee erected or lifted up with this Inſtrument that followeth, beeing made of an equal, ſtraight, thin, but yet ſtrong plate of latin, lined on the inner ſide with ſilk, or anie ſuch like ſoft thing, and ſo plac't in the wriſt of the hand, that it may com unto the palm, or the firſt joints of the

fingers; and it muſt bee tied above with convenient ſtaies, and ſo the diſcommoditie of the depreſſion, or hanging of the hand, may bee avoided: therefore this Inſtrument may bee called the Erector of the Hand.

*The Erector of the Hand.*



## CHAP. XI.

*Of helping thoſe that are* Vari *or* Valgi, *that is, crook-legged, or crook-footed, inwards or outwards.*

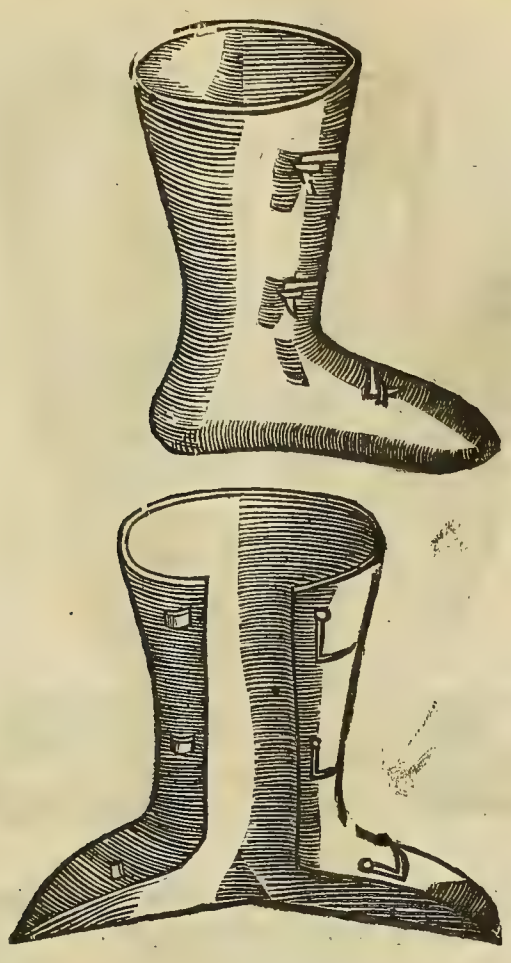
What *Varus* is. THoſe are ſaid to bee *Vari*, whoſe feet or legs are bowed or crooked inwards. This default is either from the firſt conformation in the womb, through the default in the mother, who hath her legs in like manner crooked; or becauſ that in the time when ſhee is great with childe, ſhee commonly ſit's with her legs acroſs: or elſ, after the childe is born, and that, either becauſ his legs bee not well ſwathed, when hee is lai'd into the cradle, or elſ, becauſ they bee not well pleaſed in carrying the infant; or if hee bee not well looked unto by the Nurſ, when hee learneth to go: for the bones are verie tender, and almoſt as flexible as wax.

What *Valgus* is. But contrariwiſe, thoſe are called *Valgi*, whoſe legs are crooked or bowed outwards. This may com through the default of the firſt conformation, as well as the other; for by both, the feet alſo and the knees may bee made crooked; which thing, whoſoever will amend, muſt reſtore the bones into their proper and natural place; ſo that in thoſe that are *varous*, hee muſt thruſt the bones outwards, as though hee would make them *valgous*: neither is it ſufficient to thruſt them ſo, but they ought alſo to bee retained there in their places after they are ſo thruſt; for otherwiſe they beeing not well eſtabliſhed, would ſlip back again.

They muſt bee ſtai'd in their places, by applying of collars and bolſters on that ſide whereunto the bones do lean, and incline themſelvs; for the ſame purpoſe boots may bee made of leather, of the thickneſs of a teſtone, haveing a ſlit in the former part all along the bone of the leg, and alſo under the ſole of the foot, that beeing drawn together on both ſides, they may bee the better fitted, and ſit cloſer to the leg. And let this medicine following bee applied all about the leg. ℞. *thuris, maſtich. aloës, boli armeni, an.* ℥i. *aluminis roch. reſinæ pini ſiccæ, ſubtiliſſimè pulveriſ. an.* ℥iii. *farinæ volat.* ℥iſ. *album. ovor. q.ſ.* make thereof a medicine. You may alſo add a little Turpentine, leſt it ſhould drie ſooner, or more vehemently then is neceſſarie. But you muſt beware, and take great heed, leſt that ſuch as were of late *varous* or *valgous*, ſhould attempt or ſtrain themſelvs to go, before that their joints bee confirmed; for ſo the bones that were lately ſet in their places, may ſlip aſide again. And moreover, until they are able to go without danger, let them wear high ſhoos tied cloſe to their feet, that the bones may bee ſtaied the better, and more firmly in their places; but let that ſide of the ſoal of the ſhoo bee under-lai'd whither the foot did incline before it was reſtored.

A plaſter to hold faſt reſtored bones.

*The form of little Boots, whereof the one is open, and the other ſhut.*

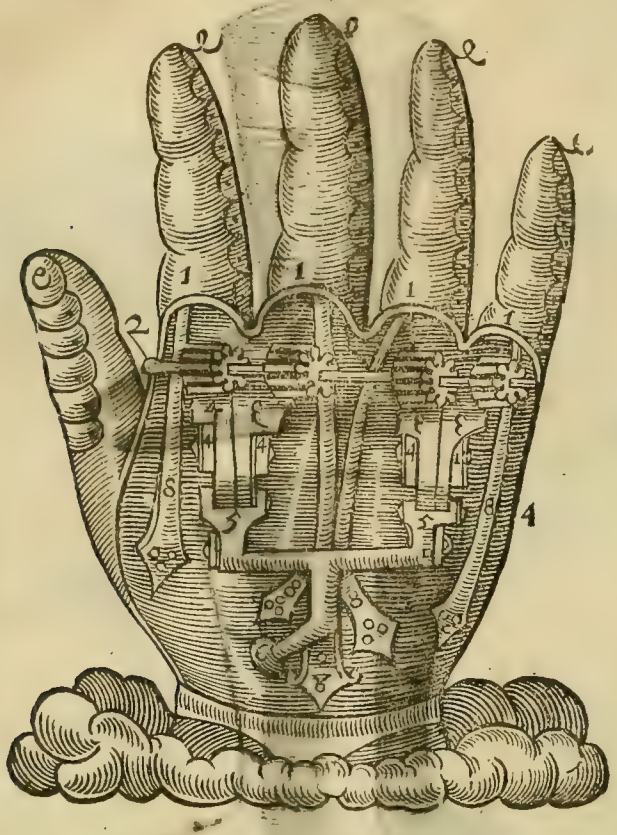


## CHAP. XII.

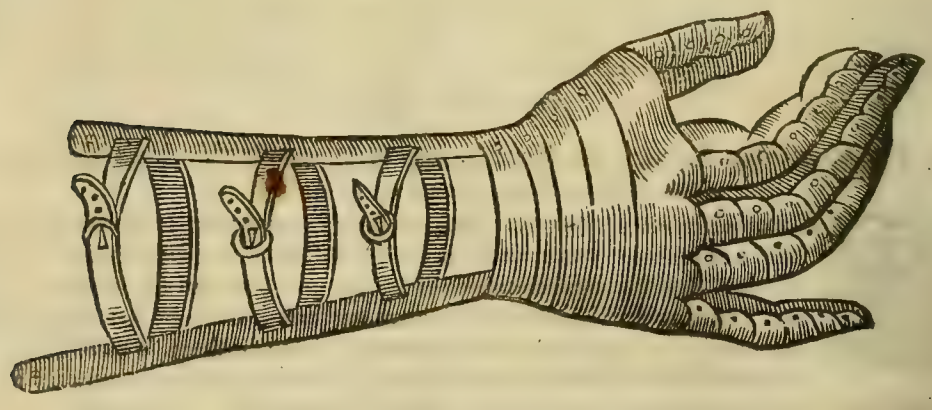
*By what means Arms, Legs, and Hands may bee made by art, and placed in ſtead of the natural Arms, Legs, or Hands that are cut off and loſt.*

NEceſſitie oftentimes conſtrain's us to finde out the meanes whereby wee may help and imitate nature, and ſupplie the defect of members that are periſhed and loſt. And hereof it commeth that wee may perform the functions of going, ſtanding and handling with arms and hands made by art, and undergo our neceſſarie flexions and extenſions with both of them. I have gotten the forms of all thoſe members made ſo by art, and the proper names of all the Engines and Inſtruments whereby thoſe artificially made are called, to my great coſt and charges, of a moſt ingenuous and excellent Smith dwelling at *Paris*, who is called of thoſe that know him, and alſo of ſtrangers, by no other name then the little *Lorain*; and here I have cauſſed them to bee portraied, or ſet down, that thoſe that ſtand in need of ſuch things, after the example of them, may cauſ ſom Smith, or ſuch like work-man to ſerv them in the like caſe. They are not onely profitable for the neceſſitie of the bodie, but alſo for the decencie and comlineſs thereof. And here followeth their forms.

*The form of an Hand made artificially of iron.*

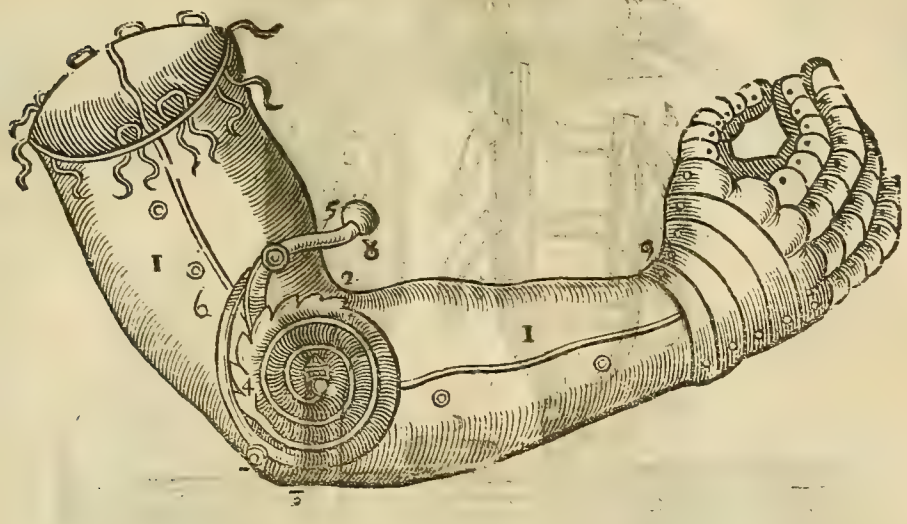


*This figure following ſheweth the back-ſide of an Hand artificially made, and ſo that it may bee tied to the arm or ſleev.*

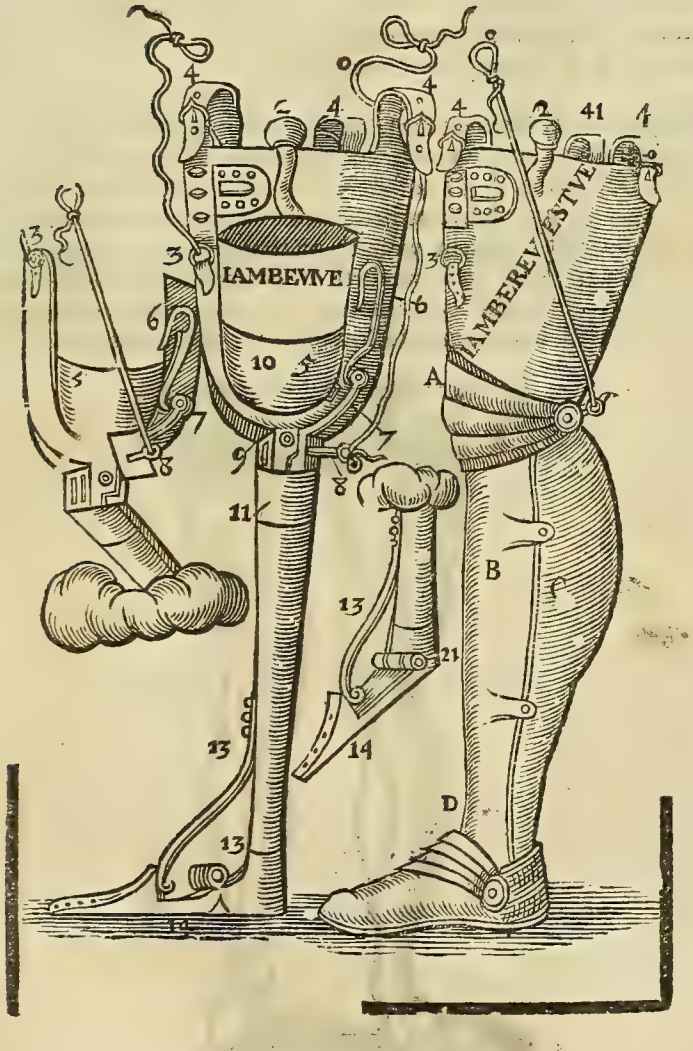


The

*The form of an Arm made of iron verie artificially.*

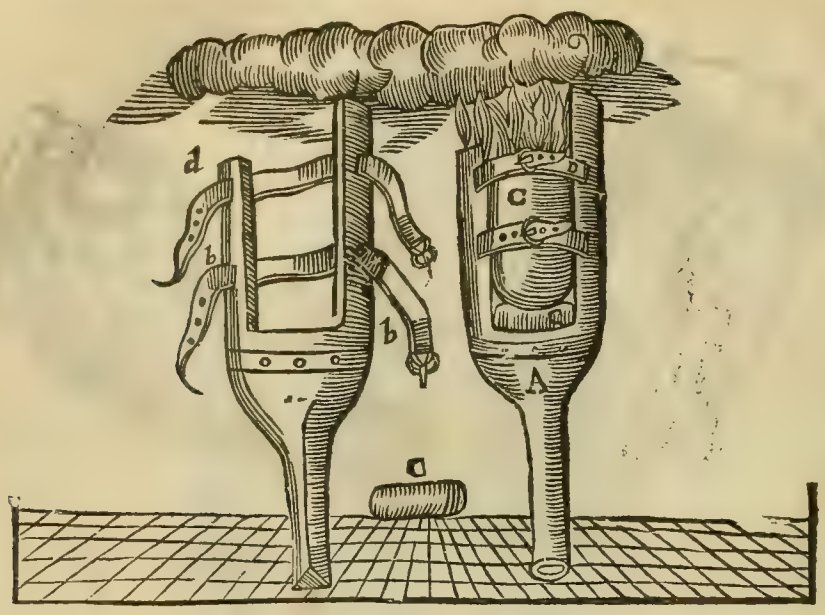


*The description of Legs made artificially of iron.*



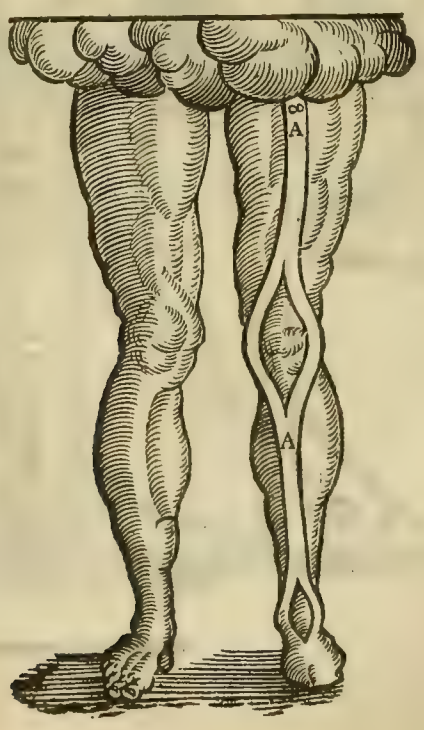

The

*The form of a woodden Leg made for poor men.*




A. *Sheweth the ſtump or ſtock of the woodden Leg.* BB. *Sheweth the two ſtaies which muſt bee on both ſides of the Leg, the ſhorter of them muſt bee on the inner ſide.* CC. *Sheweth the pillow or bolſter, whereon the knee muſt reſt in the bottom between the two ſtaies, that ſo it may reſt the ſofter.* DD. *Sheweth the thongs or girths with their round buckles, put through the two ſtaies on either ſide to ſtay the knee in his place firm and immoovable, that it ſlip not aſide.* E. *Sheweth the thigh it ſelf, that you may know after what faſhion it muſt ſtand.*

It happen's alſo manie times, that the patient, that had the nervs or tendons of his Leg wounded, long after the wound is whole and conſolidated, cannot go but with verie great pain and torment, by reaſon that the foot cannot follow the muſcle, that ſhould draw it up. That this maladie may bee remedied, you ought to faſten a linnen band made verie ſtrong unto the ſhoo that the patient weareth on that his pained foot; and at the knee it muſt have a ſlit where the knee may com forth in bowing of the Leg: and it muſt bee truſſed up faſt unto the patient's middle, that it may the better lift up and erect the foot in going. This band is marked in the figure following with the letters AA.

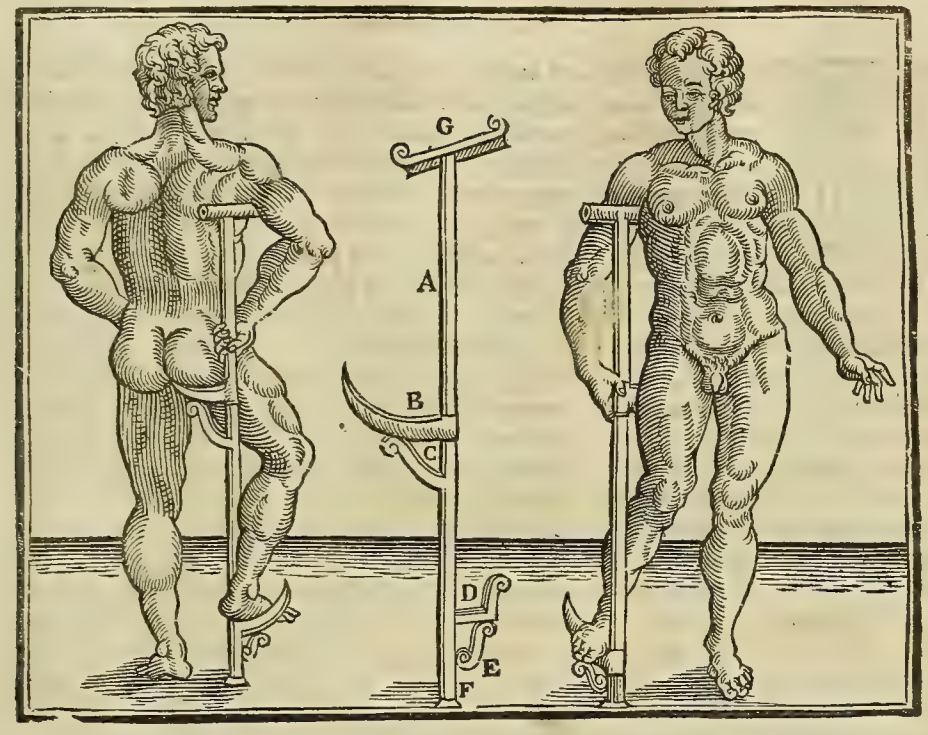



CHAP.

## CHAP. XIII.

*Of amending or helping lameneſs or halting.*

HAlting is not onely a great deformitie, but alſo verie troubleſom and grievous. Therefore if that anie bee grieved therewith by reaſon that one of his legs is ſhorter then the other, it may bee holpen by putting under his ſhort foot this ſitting crutch, which, wee are now about to deſcribe. For by the help of this, hee ſhall not onely go upright, but alſo more eaſily and with little labor or no pain at all. It was taught mee by *Nicolas Piccard* Chirurgian to the Duke of Lorain. The form thereof is this.




A. *Sheweth the ſtaff or ſtilt of this crutch, which muſt bee made of wood.* B. *Sheweth the Seat of iron whereon the thigh reſteth, juſt under the buttock.* C. *Sheweth a prop which ſtaieth up the ſeat whereon all the weight of the patient's bodie reſteth.* D. *Sheweth the ſtirrup, beeing made of iron, and bowing crooked upwards, that the foot may ſtand firm, and not ſlip off it when the patient goeth.* E. *Sheweth the prop that ſtaieth or holdeth up the ſtirrup to ſtrengthen it.* F. *Sheweth the foot of the ſtilt or crutch made of iron with manie pikes, and compaſſed with a ring or ferule, ſo to keep it from ſlipping.* G. *The croſs or head of the crutch which the patient muſt put under his arm-hole to lean upon, as it is to bee ſeen in the figure.*

*The end of the twentie third Book.*

# Of the GENERATION of Man.

## *The twentie fourth Book.*

### THE PREFACE.

The distinction of male and female.

GOD, *the Creator and maker of all things, immediately after the Creation of the World, of his unspeakable counsel and inestimable wisdom not onely distinguished mankinde, but all other liveing creatures also into a double sex, to wit, of male and female; that so they beeing moved and enticed by the allurements of lust, might desire copulation, thence to have procreation. For this bountiful Lord hath appointed it as a solace unto everie liveing creature against the most certain and fatal necessitie of death: than for as much as each particular liveing creature cannot continue for ever, yet they may endure by their species or kinde by propagation and succession of creatures, which is by procreation, so long as the world endureth. In this conjunction or copulation replenished with such delectable pleasure, (which God hath chiefly established by the law of Matrimonie,) the male and female yeeld forth their seeds, which presently mixed and conjoined, are received and kep't in the female's womb. For the seed is a certain spumous or foamie humor replenished with vitul spirit, by the benefit whereof, as it were by a certain ebullition or fermentation, it is puffed up, and swoln bigger, and both the seeds beeing separated from the more pure blood of both the parents, are the material and formal beginning of the issue; for the seed of the male beeing cast and received into the womb, is accounted the principal and efficient cause; but the seed of the female is reputed the subjacent matter, or the matter whereon it worketh. Good and laudable seed ought to bee white, shining, clammie, knottie, smelling like unto the elder or palm, delectable to bees, and sinking down in the bottom of water beeing put into it, for that which swimmeth on the water is esteemed unfruitful; for a great portion commeth from the brain, yet som thereof fall's from the whole bodie, and from all the parts both firm and soft thereof. For unless it com from the whole bodie, and everie part thereof, all and everie part of the issue cannot bee formed thereby: becaus like things are engendred of their like: and therefore it commeth that the childe resembleth the parents, not onely in stature and favor, but also in the conformation and proportion of his lims and members, and complexion and temperature of his inward parts, so that diseases are oft-times hereditarie, the weakness of this or that entral beeing translated from the parent to the childe. There are som which suppose this falling of the seed from the whole bodie not to to bee understood according to the weight and matter, as if it were a certain portion of all the blood separated from the rest; but according to the power and form, that is to say, the animal, natural and vital spirits, beeing the framers of formation and life, and also the formative facultie to fall down from all the parts into the seed, that is wrought or perfected by the Testicles; for proof and confirmation whereof, they alledg that manie perfect, sound, absolute, and well proportioned children, are born of lame and decrepit parents.*

What seed is.

The conditions of good seed.

Seed falleth from all the parts of the bodie.

Wherefore manie diseases are hereditarie.

How seed is to bee understood to fall from the whole bodie.

The cause of this distinction.

### CHAP. I.

*Why the generative parts are endued with great pleasure.*

What moveth a man to copulation.

A Certain great pleasure accompanieth the function of the parts appointed for generation, and before it, in liveing creatures that are of a lustie age, when matter aboundeth in those parts, there goeth a certain fervent or furious desire: the causes thereof manie, of which the chiefest is, That the kinde may bee preserved and kept for ever, by the propagation and substitution of other liveing creatures of the same kinde. For brute beasts which want reason, and therefore cannot bee solicitous for the preservation of their kinde, never com to carnal copulation, unless they bee mooved thereunto by a certain vehement provocation of unbridled lust, and as it were by the stimulation of venerie. But man, that is endued with reason, beeing a divine and most noble creature, would never yeeld nor make his minde subject to a thing so abject and filthie as is carnal copulation, but that the venereous ticklings, raised in those parts, relax the severitie of his minde; or reason admonisheth him that the memorie of his name ought not to end with his life, but to be preserved unto all generations, as far as may bee possible, by the propagation of his seed or issue. Therefore by reason of this profit or commoditie, nature hath

hath endued the genital parts with a far more exact or exquisite sens then the other parts, by sending the great sinews unto them, and moreover shee hath caused them to bee bedewed or moistned with a certain whayish humor, not much unlike the seed sent from the glandules or kernels called *prostatæ*, situated in men at the beginning of the neck of the bladder, but in women at the bottom of the womb: this moisture hath a certain sharpnes or biteing, for that kinde of humors of all others can chiefly provoke those parts to their function or office, and yeeld them a delectable pleasure, while they are in execution of the same. For even so whayish and sharp humors, when they are gathered together under the skin, if they wax warm, tickle with a certain pleasant itching, and by their motion infer delight: but the nature of the genital parts or members is not stirred up or provoked to the expulsion of the seed with these provocations of the humors, abounding either in quantitie or qualitie onely, but a certain great and hot spirit or breath contained in those parts, doth begin to dilate it self more and more, which causeth a certain incredible excess of pleasure or voluptuousnes, wherewith the genitals beeing replete, are spread forth or distended everie waie unto their ful greatnes. The yard is given to men whereby they may cast out their seed directly or straightly into the woman's womb, and the neck of the womb to women, whereby they may receiv that seed so cast forth, by the open or wide mouth of the same neck, and also that they may cast forth their own seed, sent through the spermatick vessels unto their testicles; these spermatick vessels, that is to say, the vein lying above, and the arterie lying below, do make manie flexions or windeings, yet one as manie as the other, like unto the tendrils of vines diversly platted or folded together, and in these folds or bendings the blood and spirit which are carried unto the testicles, are concocted a longer time, and so converted into a white seminal substance. The lower of these flexions or bowings do end in the stones or testicles. But the testicles, forasmuch as they are loos, thin, and spongeous or hollow, receiving the humor which was begun to bee concocted in the fore-named vessels, concoct it again themselvs: but the testicles of men concoct the more perfectly for the procreation of the issue; and the testicles of women more imperfectly, becaus they are more cold, les, weak and feeble, but the seed becommeth white by the contact or touch of the testicles, becaus the substance of them is white. The male is such as engendreth in another, and the female in her self, by the spermatick vessels which are implanted in the inner capacitie of the womb. But out of all doubt unles nature had prepared so manie allurements, baits and provocations of pleasure, there is scarce anie man so hot or delighted in venereous acts, which considering and marking the place appointed for humane conception, the loathsomnes of the filth which daily falleth down unto it, and wherewithall it is humected and moistned, and the vicinitie and nearnes of the great gut under it, and of the bladdder above it, but would shun the embraces of women. Nor would anie woman desire the companie of man, which once premeditate's or fore-think's with her self on the labor that shee shall sustain in bearing the burthen of her childe nine months, and of the almost deadlie pains that shee shall suffer in her deliverie.

Why the genitals are endued with a whayish moisture.

The caus of the foldings of the spermatick vessels.

Women's testicles more imperfect.

Why manie men and women abhor venereous copulation.

Men that use too frequent copulation, oftentimes in stead of seed cast forth a crude and bloodie humor, and somtimes also meer blood it self; and oft-times they can hardly make water but with great pain, by reason that the clammie and oilie moisture, which nature hath placed in the glandules called *prostatæ*, to make the passage of the urine slipperie, and to defend it against the sharpnes of the urine that passeth through it, is wasted, so that afterward they shall stand in need of the help of a Surgeon to caus them to make water with eas and without pain, by injecting of a little oil out of a Syringe into the conduit of the yard. For in generation it is fit the man cast forth his seed into the womb, with a certain impetuositie, his yard beeing stiff and distended, and the woman to receiv the same without delay into her womb, beeing wide open, lest that through delay the seed wax cold, and so becom unfruitful by reason that the spirits are dissipated and consumed. The yard is distended or made stiff, when the nervous, spongeous and hollow substance thereof is replete and puffed up with a flatulent spirit. The womb allure's or draw's the masculine seed into it self by the mouth thereof, and it receiv's the woman's seed by the horns from the spermatick vessels which com from the testicles into the hollownes or concavitie of the womb, that so it may bee tempered by conjunction, commistion and confusion with the man's seed, and so reduced or brought unto a certain equalitie: for generation or conception cannot follow without the concours of two seeds, well and perfectly wrought in the verie same moment of time, nor without a laudable disposition of the womb both in temperature and complexion: if in this mixture of seeds the man's seed in qualitie and quantitie exceed the woman's, it will bee a man-childe; if not, a woman-childe, although that in either of the kinds there is both the man's and woman's seed; as you may see by the dailie experience of those men who by their first wives have had boies onely, and by their second wives had girls onely: the like you may see in certain women, who by their first husbands have had males onely, and by their second husbands females onely. Moreover one and the same man is not alwaies like affected to get a man or a woman-childe; for by reason of his age, temperature and diet, hee doth somtimes yeeld forth seed endued with a masculine virtue, and somtimes with a feminine or weak

Why the strangurie ensueth immoderate copulation.

What things necessarie unto generation.

Why a male, and why a female is engendred.

weak virtue, ſo that it is no marvel if men get ſomtimes men, and ſomtimes women-children.

## CHAP. II.

*Of what qualitie the ſeed is, whereof the male, and whereof the female is engendred.*

Why men children are ſooner formed in the womb then women.

The ſeed is that in power from whence each thing cometh or floweth.

Why the children are moſt commonly like unto their fathers.

When children ſhould bee begotten.

Why oftentimes the childe reſembleth the Grandfather.

Why ſomtimes thoſe that are diſeaſed do get ſound children.

MAle children are engendred of a more hot and drie ſeed, and women of a more cold and moiſt: for there is much leſs ſtrength in cold then in heat, and likewiſe in moiſture then in drineſs; and that is the cauſ why it will bee longer before a girl is formed in the womb then a boy. In the ſeed lieth both the procreative and the formative power: as for example; In the power of Melon-ſeed are ſituate the ſtalks, branches, leavs, flowrs, fruit, the form, color, ſmel, taſte, ſeed and all. The like reaſon is of other ſeeds; ſo Apple-grafts engrafted in the ſtock of a Pear-tree, bear Apples; and wee do alwaies finde and ſee by experience, that the tree (by virtue of grafting) that is grafted, doth convert it ſelf into the nature of the Siens wherewith it is grafted. But although the childe that is born doth reſemble or is verie like unto the father or the mother, as his or her ſeed exceedeth in the mixture; yet for the moſt part it happeneth that the children are more like unto the father then the mother, becauſ that in the time of copulation, the minde of the woman is more fixed on her husband, then the minde of the husband on, or towards his wife: for in time of copulation or conception, the forms, or the likneſſes of thoſe things that are conceived or kept in minde, are tranſported and impreſſed in the childe or iſſue; for ſo they affirm that there was a certain Queen of the Æthiopians who brought forth a white childe, the reaſon was (as ſhee confeſſed) that at the time of copulation with her King, ſhee thought on a marvelous white thing, with a verie ſtrong imagination. Therefore *Heſiod* advertiſeth all married people not to give themſelvs to carnal copulation when they return from burials, but when they com from feaſts and plaies, leſt that their ſad, heavie, and penſive cogitations, ſhould bee ſo tranſuſed and engrafted in the iſſue, that they ſhould contaminate or infect the pleaſant joifulneſs of his life with ſad, penſive or paſſionate thoughts. Somtimes it happeneth, although verie ſeldom, the childe is neither like the father nor the mother, but in favor reſembleth his Grandfather, or anie other of his kindred, by reaſon that in the inward parts of the parents, the engrafted power and nature of the Grandfather lieth hidden: which when it hath lurked there long, not working anie effect, at length break's forth by means of ſom hidden occaſion: wherein nature reſembleth the Painter, makeing the lively portraiture of a thing, which as far as the ſubject matter will permit, doth form the iſſue lik unto the parents in everie habit; ſo that often-times the diſeaſes of the parents are transferred or participated unto the children, as it were by a certain hereditarie title: for thoſe that are crook-back't get crook-back't children, thoſe that are lame, lame; thoſe that are leprous, leprous; thoſe that have the ſtone, children haveing the ſtone; thoſe that have the ptiſick, children haveing the ptiſick; and thoſe that have the gout, children haveing the gout: for the ſeed follow's the power, nature, temperature and complexion of him that engendereth it. Therefore of thoſe that are in health and ſound, healthie and ſound; and of thoſe that are weak and diſeaſed, weak and diſeaſed children are begotten, unleſs happily the ſeed of one of the parents that is ſound doth correct or amend the diſeaſed impreſſion of the other that is diſeaſed, or elſ the temperate and ſound womb as it were by the gentle and pleaſant breath thereof.

## CHAP. III.

*What is the cauſ why Females of all brute beaſts, beeing great with young, do neither deſire, nor admit the males, until they have brought forth their Young.*

Why the ſenſ of venereous acts is given to brute beaſts.

Why of brute beaſts the males rageing with luſt, follow after the females.

Wherefore a woman when ſhee is with childe, deſireth copulation.

THe cauſ hereof is, foraſmuch as they are mooved by ſenſ onely, they applie themſelvs unto the thing that is preſent, verie little, or nothing at all perceiving things that are paſt, and to com. Therefore after they have conceived, they are unmindeful of the pleaſure that is paſt, and do abhor copulation: for the ſenſ or feeling of luſt is given unto them by nature, onely for the preſervation of their kinde, and not for voluptuouſneſs, or delectation. But the males rageing, ſwelling, and as it were ſtimulated by the provocations of the heat, or fervencie of their luſt, do then run unto them, follow and deſire copulation, becauſ a certain ſtrong odor or ſmell commeth into the air from their ſecret or genital parts, which pierceth into their noſtrils, and unto their brain, and ſo inferreth an imagination, deſire, and heat. Contrariwiſe, the ſenſ and feeling of venereous actions ſeemeth to bee given by nature to women, not onely for the propagation of iſſue and for the conſervation of mankinde, but alſo to mitigate and aſſwage the miſeries of man's life, as it were by the entiſements of that pleaſure: alſo the great ſtore of hot blood that is about the heart, wherewith men abound, maketh greatly to this

this purpoſe, which by impulſion of imagination, which ruleth the humors, beeing driven by the proper paſſages down from the heart and entrals into the genital parts, doth ſtir up in them a new luſt.

The males of brute beaſts, beeing provoked or mooved by the ſtimulations of luſt, rage, and are almoſt burſt with a *Tentigo* or extenſion of the genital parts, and ſomtimes wax mad; but after that they have ſatisfied their luſt with the female of their kinde, they preſently becom gentle, and leav off ſuch fierceneſs.

## CHAP. IV.

*What things are to bee obſerved, as neceſſarie unto generation in the time of copulation.*

How women may bee mooved to venerie & conception.

WHen the husband commeth into his wive's chamber, hee muſt entertain her with all kinde of dalliance, wanton behavior, and allurements to venerie; but if hee perceiv her to bee ſlow, and more cold, hee muſt cheriſh, embrace, and tickle her, and ſhall not abruptly, the nervs beeing ſuddenly diſtended, break into the field of nature; but rather ſhall creep in by little and little, intermixing more wanton kiſſes with wanton words and ſpeeches, handling her ſecret parts and dugs, that ſhee may take fire, and bee enflamed to venerie; for ſo at length the womb will ſtrive and wax fervent with a deſire of caſting forth its own ſeed, and receiving the man's ſeed to bee mixed together therewith. But if all theſe things will not ſuffice to enflame the woman; for women for the moſt part are more ſlow and ſlack unto the expulſion or yeelding forth of their ſeed, it ſhall bee neceſſarie firſt to foment her ſecret parts with the decoction of hot herbs made with Muſcadine, or boiled in anie other good wine; and to put a little Musk or Civet into the neck or mouth of the womb: and when ſhee ſhall perceiv the efflux of her ſeed to approach, by reaſon of the tickling pleaſure, ſhee muſt advertiſe her husband thereof, that at the verie inſtant time or moment, hee may alſo yeeld forth his ſeed, that by the concourſor meeting of the ſeeds, conception may bee made; and ſo at length a childe formed and born. And that it may have the better ſucceſs, the husband muſt not preſently ſeparate himſelf from his wive's embraces, leſt the air ſtrike into the open womb, and ſo corrupt the ſeeds before they are perfectly mixed together. When the man depart's, let the woman lie ſtill in quiet, laying her legs or her thighs acroſs, one upon another; and raiſing them up a little, leſt that by motion or downward ſituation, the ſeed ſhould bee ſhed or ſpilt: which is the cauſ why ſhee ought at that time not to talk, eſpecially chideing, nor to cough, nor ſneeſ, but give her ſelf to reſt and quietneſs, if it bee poſſible.

The meeting of the ſeeds moſt neceſſarie for generation.

## CHAP. V.

*By what ſigns it may bee known, whether the woman have conceived, or not.*

IF the ſeed in the time of copulation, or preſently after bee not ſpilt, if in the meeting of the ſeeds the whole bodie do ſomwhat ſhake, that is to ſay, the womb drawing it ſelf together for the compreſſion and enterteinment thereof, if a little feeling of pain doth run up and down the lower bellie, and about the navel, if ſhee bee ſleepie, if ſhee loath the embraceings of a man, and if her face bee pale, it is a token that ſhee hath conceived.

In ſom, after conception ſpots or freckles ariſe in their face, their eies are depreſſed and ſunk in, the white of their eies waxeth pale, they wax giddie in the head, by reaſon that the vapors are raiſed up from the menſtrual blood that is ſtopped, ſadneſs and heavineſs griev their mindes, with loathing and waiwardneſs, by reaſon that the ſpirits are covered with the ſmoakie darkneſs of the vapors: pains in the teeth and gums, and ſwounding often-times commeth; the appetite is depraved or overthrown, with aptneſs to vomit, and longing, whereby it happeneth, that they loath meats of good juice, and long for and deſire illaudable meats, and thoſe that are contrarie to nature, as coles, dirt, aſhes, ſtinking ſalt-fiſh, ſowr, auſtere and tart fruits, pepper, vinegar, and ſuch like acrid things, and other, altogether contrarie to nature and uſe, by reaſon of the condition of the ſuppreſſed humor abounding and falling into the orifice of the ſtomach. This appetite ſo depraved or overthrown, endureth in ſom until the time of childe-birth; in others it commeth in the third moneth after their conception, when hairs do grow on the childe: and laſtly, it leaveth them a little before the fourth moneth; becauſ that the childe, beeing now greater and ſtronger, conſume's a great part of the excremental and ſuperfluous humor. The ſuppreſſed or ſtopped terms in women that are great with childe, are divided into three parts: the more pure portion maketh the nutriment for the childe, the ſecond aſſcendeth by little and little iuto the dugs, and the impureſt of all remaineth in the womb about the infant, and maketh the ſecondine or after-birth, wherein the infant lieth as in a ſoft bed. Thoſe women are great

Spots or ſpecks in the faces of thoſe that are with childe.

Why manie women beeing great with childe refuſe laudable meats, and deſire thoſe that are illaudable, and contrarie to nature.

The ſuppreſſed terms divided into three parts.

with childe, whoſe urine is more ſharp, fervent, aud ſomwhat bloodie, the bladder not onely waxing warm by the compreſſion of the womb; fervent, by reaſon of the blood contained in it, but alſo the thinner portion of the ſame blood beeing expreſſed, and ſweating out into the bladder. A ſwelling and hardneſs of the dugs, and veins that are under the dugs in the breſts and about them, and milk comming out when they are preſſed, with a certain ſtirring motion in the bellie, are certain infallible ſigns of greatneſs with childe. Neither in this greatneſs of childe-bearing, the veins of the dugs onely, but of all the whole bodie, appear full and ſwelled up, eſpecially the veins of the thighs and legs; ſo that by their manifold folding and knitting together, they do appear varicous, whereof commeth ſluggiſhneſs of the whole bodie, heavineſs and impotencie, or difficultie of going, eſpecially when the time of deliverance is at hand. Laſtly, if you would know whether the woman have conceived or not, give unto her when ſhee goeth to ſleep, ſom meed or honied water to drink; and if ſhee have a gripeing in her guts or bellie, ſhee hath conceived; if not, ſhee hath not conceived.

*Hip. 1. de morb. mul.*

*Aph. 41. ſect. 5.*

## CHAP. VI.

*That the womb, ſo ſoon as it hath received the ſeed, is preſently contracted, or drawn together.*

AFter that the ſeeds of the male and female have both met, and are mixed together in the capacitie of the womb, then the orifice thereof doth draw it ſelf cloſe together, leſt the ſeeds ſhould fall out. There the female's ſeed goeth and turneth into nutriment, and the increaſ of the male's ſeed; becauſ all things are nouriſhed, and do increaſ by thoſe things that are moſt familiar, and like unto them. But the ſimilitude and familiaritie of ſeed with ſeed is far greater then with blood; ſo that when they are perfectly mixed and co-agulated together, and ſo wax warm by the ſtraight and narrow incloſure of the womb, a certain thin skin doth grow about it, like unto that that will bee over unſcimmed milk.

Why the female ſeed is nutriment for the male ſeed.

Moreover, this concretion or congealing of the ſeed, is like unto an egg laied before the time that it ſhould: that is to ſay, whoſe membrane or tunicle that compaſſeth it about, hath not as yet increaſed or grown into a ſhellie hardneſs about it; in folding-wiſe are ſeen manie ſmall threds divideing themſelvs, over-ſpread with a certain clammie, whitiſh or red ſubſtance, as it were with black blood. In the middeſt under it appeareth the navel, from whence that ſmall skin is produced. But a man may underſtand manie things that appertain unto the conception of mankinde by the obſervation of twentie egs, ſetting them to bee hatched under an Hen, and takeing one everie daie and breaking it, and diligently conſidering it; for in ſo doing, on the twentieth daie you ſhall finde the Chick perfectly formed with the navel. That little skin that ſo compaſſeth the infant in the womb is called the ſecundine or *Chorion*, but commonly the after-birth.

A compendious way to underſtand humane conception.

This little skin is perfectly made within ſix daies, according to the judgment of *Hippocrates*, as profitable and neceſſarie not onely to contain the ſeeds ſo mixed together, but alſo to ſuck nutriment through the orifices of the veſſels ending in the womb. Thoſe orifices the Greeks do call *Cotyledones*, and the Latines *Acetabula*, for they are as it were hollowed eminences, like unto thoſe, which may bee ſeen in the feet or ſnout of a Cuttle-fiſh manie times in a double order, both for the working and holding of their meat. Thoſe eminences called *Acetabula* do not ſo greatly appear in women as in manie brute beaſts. Therefore by theſe the ſecundine cleaveth on everie ſide unto the womb, for the conſervation, nutrition, and increaſ of the conceived ſeed.

*Lib. de nat. puer.*

What the *Cotyledones* are.

## CHAP. VII.

*Of the generation of the navel.*

AFter the woman hath conceived, to everie one of the aforeſaid eminencies groweth preſently another veſſel, that is ſay, a vein to the vein, and an arterie to the arterie: theſe ſoft, and yet thin veſſels, are framed with a little thin membrane, which beeing ſpread under, ſticketh to them; for to them it is in ſtead of a membrane, and a ligament, and a tunicle, or a defence; and it is doubled with the others, and made of the vein and arterie of the navel. Theſe new ſmall veſſels of the infant, with their orifices, do anſwer directly one to one to the *Cotyledons* or eminencies of the womb; they are verie ſmall and little, as it were the hairie *fibres* that grow upon roots that are in the earth; and when they have continued ſo a longer time, they are combined together, that of two they are made one veſſel, until that by continual connexion, all thoſe veſſels go and degenerate into two other great veſſels, called the *umbilical* veſſels, or the veſſels of the navel; becauſ they do make the navel, and do enter

enter into the childe's bodie by the hole of the navel. Here *Galen* doth admire the singular providence of God and Nature; becauſ that in ſuch a multitude of veſſels, and in ſo long a paſſage or length that they go or are produced, the vein doth never confound it ſelf, nor ſtick to the arterie, nor the arterie to the vein; but everie veſſel joineth it ſelf to the veſſel of its own kinde. But the umbilical vein, or navel-vein, entering into the bodie of the childe, doth join it ſelf preſently to the hollow part of the liver; but the arterie is divided into two, which join themſelvs to the two Iliack arteries along the ſides of the bladder, and are preſently covered with the *peritonæum*; and by the benefit thereof are annexed unto the parts which it goe's unto. Thoſe ſmall veins and arteries are as it were the roots of the childe; but the vein and arterie of the navel are as it were the bodie of the tree, to bring down the nutriment to nouriſh the childe. For firſt, wee live in the womb the life of a plant, and then next the life of a ſenſitive creature: and, as the firſt tunicle of the childe is called *Chorion*, or *Allantoïdes*; ſo the other is called *Amnios*, or *Agnina*, which doth compaſs the ſeed or childe about on everie ſide. Theſe membranes are moſt thin, yea for their thinneſs like unto the Spider's web, woven one upon another; and alſo connexed in manie places by the extremities of certain ſmall and hairie ſubſtances, which at length, by the adjunction of their like do get ſtrength; whereby you may underſtand, what is the cauſ why by divers and violent motions of the mother in going and dancing, or leaping, and alſo of the infant in the womb, thoſe membranes are not almoſt broken. For they are ſo conjoined by the knots of thoſe hairie ſubſtances, that between them nothing, neither the urine, nor the ſweat can com, as you may plainly and evidently perceiv in the diſſection of a woman's bodie that is great with childe, not depending on anie other man's opinion, bee it never ſo old or inveterate: yet the ſtrength of thoſe membranes is not ſo great, but that they may bee ſoon broken in the birth, by the kicking of the childe.

The vein never joineth it ſelf with the arterie.

*Hippocrates* calleth all the membranes that compaſs the infant in the womb, according to the judgment of *Galen* in his book *de uſu partium*, by the name of the *ſecundines*.

## CHAP. VIII.

*Of the Umbilical veſſels, or the veſſels belonging to the navel.*

MAnie of the antient Writers have written that there are five veſſels found in the navel. But yet in manie, nay all the bodies I ſought in for them, I could never finde but three; that is to ſay, one vein, which is very large, ſo that in the paſſage thereof it will receiv the tag of a point, and two arteries, but not ſo large, but much narrower; becauſ the childe wanteth or ſtandeth in need of much more blood for his conformation, and the nutriment or increaſ of his parts, then of vital ſpirit.

An old opinion confuted.

Theſe veſſels makeing the bodie of the navel, which, as it is thought, is formed within nine or ten daies, by their doubling and folding, make knots like unto the knots of a Franciſcan Friers girdle, that ſtaying the running blood in thoſe their knottie windeings, they might more perfectly concoct the ſame: as may bee ſeen in the ejaculatorie ſpermatick veſſels, for which uſe alſo the length of the navel is half an ell; ſo that in manie infants that are ſomwhat grown, it is found three or four times doubled about their neck or thigh.

To what uſe the knots of the childe's navel in the womb ſerveth.

As long as the childe is in his mother's womb, hee taketh his nutriment onely by the navel, and not by his mouth; neither doth hee enjoy the uſe of eies, ears, noſtrils or fundament, neither needeth hee the functions of the heart. For ſpirituous blood goeth unto it by the arteries of the navel, and into the Iliack arteries; and from the Iliack arteries unto all the other arteries of the whole bodie, for by the motion of theſe onely the infant doth breathe. Therefore it is not to bee ſuppoſed that the air is carried or drawn in by the lungs unto the heart, in the bodie of the childe; but contrariwiſe from the heart to the lungs. For neither the heart doth perform the generation or working of blood, or of the vital ſpirits. For the iſſue or infant is contented with them as they are made and wrought by his mother. Which, until it hath obtained a full, perfect and whole deſcription of his parts and members, cannot bee called a childe; but rather an embryon, or an imperfect ſubſtance.

The childe in the womb taketh his nutriment by his navel, not by his mouth.

How the childe breatheth.

## CHAP. IX.

*Of the ebullition or ſwelling of the ſeed in the womb, and of the concretion of the bubbles or bladders, or the three principal entrals.*

IN the ſix firſt daies of conception the new veſſels are thought to bee made and brought forth of the eminencies or *cotylidons* of the mother's veſſels, and diſperſed into all the whole ſeed, as they were *fibres*, or hairie ſtrings. Thoſe, as they pierce the womb, ſo do they equally and in like manner penetrate the tunicle *Chorion*. And it is carried this way, beeing a paſſage not onely neceſſarie for the nutriment and conformation of the parts, but alſo into the veins diverſly woven and diſperſed into the skin *Chorion*. For thereby it commeth

to paſs, that the ſeed it ſelf boileth, and as it were fermenteth or ſwelleth, not onely through occaſion of the place, but alſo of the blood and vital ſpirits that flow unto it; and then it riſeth into three bubbles or bladders, like unto the bubbles which are occaſioned by the rain falling into a river or channel full of water. Theſe three bubbles or bladders, are certain rude, or new forms, or concretions of the three principall entrals, that is to ſay, of the liver, heart and brain. All this former time it is called ſeed, and by no other name; but when thoſe bubbles ariſe, it is called an embryon, or the rude form of a bodie until the perfect conformation of all the members: on the fourth day after that the vein of the navel is formed, it ſucketh groſſer blood, that is, of a more full nutriment out of the *Cotylidons*. And this blood, becauſ it is more groſs, eaſily congeal's and curdle's in that place, where it ought to prepare the liver fully and abſolutely made. For then it is of a notable great bigneſs above all the other parts; and therefore it is called *Parenchyma*, becauſ it is but onely a certain congealing or concretion of blood brought together thither, or in that place. From the gibbous part thereof ſpringeth the greater part or trunk of the hollow vein, called commonly *vena cava*, which doth diſperſ his ſmall branches, which are like unto hairs, into alſo the ſubſtance thereof: and then it is divided into two branches, whereof the one goeth upwards, the other downwards unto all the particular parts of the bodie.

The three bladders.

When the ſeed is called an embryon.

Why the liver is called *Parenchyma*.

In the mean ſeaſon the arteries of the navel ſuck ſpirituous blood out of the eminencies or *Cotylidons* of the mother's arteries, whereof, that is to ſay, of the more fervent and ſpirituous blood, the heart is formed in the ſecond bladder or bubble, beeing endued with a more fleſhie, ſound, and thick ſubſtance, as it behooveth that veſſel to bee, which is the fountain from whence the heat floweth, and hath a continual motion.

In this the virtue formative hath made two hollow places; one on the right ſide, another on the left. In the right, the root of the hollow vein is infixed or ingraffed, carrying thither neceſſarie nutriment for the heart: in the left is formed the ſtamp or root of an arterie, which preſently doth divide it ſelf into two branches; the greater whereof goeth upwards to the upper parts, and the wider unto the lower parts, carrying unto all the parts of the bodie life and vital heat.

## CHAP. X.

*Of the third Bubble or Bladder, wherein the head and the brain is formed.*

THe far greater portion of the ſeed goeth into this third bubble, that is to ſay, yeelding matter for the conformation of the brain, and all the head. For a greater quantitie of ſeed ought to go unto the conformation of the head and brain; becauſ theſe parts are not ſanguine or bloodie, as the heart and liver; but in a manner without blood, bonie, marrow, cartilaginous, nervous, and membranous, whoſe parts, as the veins, arteries, nervs, ligaments, panicles, and skin, are called *ſpermatick* parts; becauſ they obtain their firſt conformation almoſt of ſeed onely: although that afterwards they are nouriſhed with blood, as the other fleſhie and muſculous parts are. But yet the blood, when it is com unto thoſe parts, degenerateth, and turneth into a thing ſomwhat ſpermatick, by virtue of the aſſimulative facultie of thoſe parts. All the other parts of the head, form and faſhion themſelvs unto the form of the brain, when it is formed; and thoſe parts which are ſituated and placed about it for defence eſpecially, are hardened into bones.

Why the greater portion of ſeed goeth into generation of the head and brain.

The head, as the ſeat of the ſenſes, and manſion of the minde and reaſon, is ſituated in the higheſt place; that from thence, as it were from a loftie tower or turret, it might rule and govern all the other members, and their functions and actions that are under it: for there the ſoul or life, which is the rectreſs or governeſs, is ſituated; and from thence it floweth, and is diſperſed into all the whole bodie. Nature hath framed theſe three principal entrals, as props and ſuſtentations for the weight of all the reſt of the bodie: for which matter alſo ſhee hath framed the bones.

Why the head is placed on the top of the bodie.

The firſt bones that appear to bee formed, or are ſuppoſed to bee conformed, are the bones called *oſſa Ilium*, connexed or united by ſpondyls that are between them: then all the other members are framed and proportioned by their concavities and hollowneſſes, which generally are ſeven, that is to ſay, two of the ears, two of the noſe, one of the mouth, and in the parts beneath the head, one of the fundament, and another of the *yard* or conduit of the bladder; and furthermore in women, one of the neck of the womb, without the which they can never bee made mothers or bear children.

When all theſe are finiſhed, nature, that ſhee might poliſh her excellent work in all ſorts, hath covered all the bodie and everie member thereof with skin. Into this excellent work or *Microcoſmos* ſo perfected, God, the author of nature and all things, infuſeth or ingrafteth a ſoul or life: which St. *Auguſtine* prooveth by this ſentence of *Moſes*: *If anie man ſmite a woman with child, ſo that thereby ſhee bee delivered before her natural time, and the child be dead, beeing firſt formed in the womb, let him die the death: but if the child hath not as yet obtained the ful proportion*

*Exod.20.qu.51*

and

*and conformation of his bodie and members, let him recompence it with monie.* Therefore it is not to bee thought that the life is derived, propagated or taken from *Adam* or our parents, as it were an hereditarie thing distributed unto all mankinde by their parents; but wee must believ it to bee immediately creäted of God, even at the verie instant time when the child is absolutely perfected in the lineaments of his bodie, and so given unto it by him.

So therefore the rude lumps of flesh called *molæ* that engender in women's wombs, and monsters of the like breeding and confused bigness, although by reason of a certain quakeing and shivering motion, they seem to have life, yet they cannot bee supposed to bee endued with a life or a reasonable soul: but they have their motion, nutriment and increas wholly of the natural and infixed facultie of the womb, and of the generative or procreative spirit that is ingraffed naturally in the seed. The *molæ* in the womb liveth not as the childe.

But even as the infant in the womb obtaineth not perfect conformation before the thirtieth day, so likewise it doth not move before the sixtieth day: at which time it is most commonly not perceived by women, by reason of the smalness of the motion. But now let us speak briefly of the life or soul, wherein consisteth the principal original of everie function in the bodie, and likewise of generation.

## CHAP. XI.

### *Of the life or soul.*

THE soul entreth into the bodie, so soon as it hath obtained a perfect and absolute distinction and conformation of the members in the womb, which in male-children, by reason of the more strong and forming heat which is ingraffed in them, is about the fortieth day, and in females about the fortie fifth day; in som sooner, and in som later, by reason of the efficacie of the matter working, and pliantness or obedience of the matter whereon it worketh. Neither doth the life or soul beeing thus inspired into the bodie presently execute or perform all his functions, becaus the instruments that are placed about it cannot obtain a firm and hard consistence necessarie for the lively, but especially for the more divine ministeries of the life or soul, but in a long process of age or time. The life goeth not into the mas of seed that doth engender the childe, before the bodie of the childe and each part thereof hath his perfect proportion and form.

Those instruments of the soul are vitiated either in the first conformation, as when the form or fashion of the head is shaped upwards or pyramidal, as was the head of *Therſites*, that lived in the time of the Trojan war, and of *Triboulet* and *Tonin*, that lived in later years; or also by som casualtie, as by the violent handling of the midwife, who by compression, by reason that the scul is then tender and soft, hath caused the capacitie of the ventricles that bee under the brain to bee too narrow for them: or by a fall, stroak, disorder in diet, as by drunkenness, or a fever, which inferreth a lithargie, excessive sleepiness, or phrensie. Why the life or soul doth not presently execute all his offices.

Presently after the soul is entred the bodie, God endueth it with divers and sundrie gifts: hereof it commeth that som are endued with wisdom by the spirit; others with knowledg by the same spirit; others with the gift of healing by the same spirit; others with power, dominion and rule; others with prophesie; others with diversities of tongues; and to others other endowments, as it hath pleased the divine providence and bountie of God to bestow upon them, against which no man ought to contend or speak. *For it is not meet that the thing formed should say unto him that formed it, why hast thou made mee thus? hath not the Potter power to make of the same lump of claie one vessel to honor and another to dishonor?* it is not my purpose, neither belongeth it unto mee or anie other humane creature to search out the reason of those things, but onely to admire them with all humilitie, But yet I dare affirm this one thing, that a noble and excellent soul neglecteth elementarie and transitorie things, and is ravished and mooved with the contemplation of celestial, which it cannot freely enjoie before it bee separated from this earthlie inclosure or prison of the bodie, and bee restored unto its original. 1 *Cor. c.* 12.

Therefore the soul is the inward *Entelechia* or perfection, or the primitive cause of all motions and functions both natural and animal, and the true form of man. The Antients have endevoured to expres the obscure sence thereof by many descriptions. For they have called it a celestiall spirit, and a superior, incorporal, invisible, an immortal essence, which is to bee comprehended of its self alone, that is, of the minde or understanding. Others have not doubted but that wee have our souls inspired by the universal divine minde, which as they are alive, so they do bestow life on the bodies unto whom they are annexed or united. And although this life bee dispersed into all the whole bodie, and into everie portion of the same, yet is it void of all corporal weight or mixtion, and it is wholly and alone in everie several part, beeing simple and invisible, without all composition or mixture, yet endued with manie virtues and faculties; which it doth What the soul or life is. The life is in all the whole bodie, and in everie portion thereof. The life or soul is simple and indivisible

doth utter in divers parts of the bodie: For it feeleth, imagineth, judgeth, remembreth, underſtandeth, and ruleth all our deſires, pleaſures, and animal motions; it ſee'th, heareth, ſmelleth, taſteth, toucheth: and it hath divers names of theſe ſo manie and ſo great functions, which it performeth in divers parts of the bodie. It is called the *ſoul* or *life*; becauſ it maketh the bodie live, which of it ſelf is dead. It is called the *ſpirit* or *breath*; becauſ it inſpireth our bodies. It is called *reaſon*; becauſ it diſcerneth truth from falſhood, as it were by a certain divine rule. It is termed the *minde*; becauſ it is mindeful of things paſt, in re-calling and remembring them: And it is called the *vigor* or *courage*; becauſ it giveth vigor and courage to the ſluggiſh weight, or maſs of the bodie. And laſtly, it is called the *ſenſ* and *underſtanding*; becauſ it comprehendeth things that are ſenſible and intelligible. Becauſ it is incorporeal, it cannot occupie a place by corporeal extenſion; although notwithſtanding it filleth the whole bodie. It is *ſimple*; becauſ it is but one in eſſence, not increaſed, nor diminiſhed: for it is no leſs in a Dwarf then in a Giant; and it is like perfect and great in an infant as in a man, according to its own nature.

Divers names, and the reaſon of divers names that are given to humane forms.

But there are three kindes of bodies informed by a ſoul whereby they live: the firſt beeing the moſt imperfect, is of plants; the ſecond of brute beaſts; and the third of men. The plants live by a vegetative; beaſts by a ſenſitive; and men by an intellective ſoul. And as the ſenſitive ſoul of brute beaſts is endued with all the virtues of the vegetative; ſo the humane intellective comprehendeth the virtues of all the inferior, not ſeparated by anie diviſion, but by beeing indiviſibly united with reaſon and underſtanding, into one humane form and ſoul whereon they depend. But becauſ wee have ſaid a little before, that divers functions of the life are reſident, and appear in divers parts of the bodie here in this place, omitting all others, wee will proſecute thoſe onely which are accounted the principal.

Three kindes of liveing bodies.

The ſuperior ſoul containeth in it ſelf all the powers of the inferior.

The principal functions of an humane ſoul, according to the opinion of manie, are four in number, proceeding from ſo manie faculties, and conſequently from one ſoul; they are theſe: The Common Senſ, Imagination, Reaſoning, and Memorie. And they think that the common or interior ſenſ doth receiv the forms and images of ſenſible things, beeing carried by the ſpirit through the paſſage of the nervs, as an inſtrument of the external ſenſes, as it were a meſſenger to go between them; and it ſerv's not onely to receiv them, but alſo to know, perceiv, and diſcern them. For the eie, wherein the external ſenſ of ſeeing conſiſteth, doth not know white or black. Therefore it cannot diſcern the differences of colors, as neither the tongue taſte's, nor the noſe ſavor's, nor the ears ſound, nor laſtly, the hands their touching qualitie: yea, the eie doth not of it ſelf perceiv that it ſee'th, nor the noſe that it ſmelleth, nor the ears that they hear, nor the tongue that it taſteth, nor the hands that they touch. For all theſe things are the offices and functions of the common ſenſ; for this ſenſ knoweth that the eie hath ſeen ſom thing, either white, black, red, a man, horſ, ſheep, or ſom ſuch like material thing; yea, even when the ſight is gon and paſt; and ſo likewiſe the noſe to have ſmelled this or that ſavor, the ear to have heard this or that ſound, the tongue to have taſted this or that taſte, and the hand to have touched this or that thing, bee they never ſo divers. For all the external ſenſes, and all the functions thereof do end, and are referred to the Common ſenſ, as it were the lines of a circle from the circumference into the center, as it is expreſſed in this figure.

What the common ſenſ. The fuuction of the common ſenſ is double.

For which cauſ it is called the common or principal ſenſ; for that therein the primitive power of feeling or perceiving is ſituated, for it uſeth the miniſterie or ſervice of the external ſenſes, to know manie and divers things, whoſe differences it doth diſcern and judg; but ſimple things, that are of themſelvs, and without anie compoſition and connexion, which may conſtitute anie thing true or falſ, or anie argumentation, belongeth onely to the minde, underſtanding, or reaſon. For this was the counſel of nature, that the external ſenſes ſhould receiv the forms of things ſuperficially, lightly, and gently onely; like as a glaſs, not to anie other end, but that they ſhould preſently ſend them unto the Common ſenſ, as it were unto their center and prince, which hee (that is to ſay, the Common ſenſ) delivereth to bee collected unto the underſtanding or reaſoning facultie of the ſoul, which *Avicen* and *Averroïs* have ſuppoſed to bee ſituated in the former part of the brain.

For what cauſ the internal ſenſ is called the common ſenſ. The common ſenſ underſtandeth or knoweth thoſe things that are ſimple onely.

Next unto the common ſenſ followeth the phantaſie or imagination, ſo called, becauſ of it ariſe the forms and *Idea's* that are conceived in the minde, called of the Greeks *Phantaſmata*.

What imagination is.

*Phantaſmata.* This doth never reſt but in thoſe that ſleep: neither alwaies in them, for oft-times in them it cauſſeth dreams, and cauſeth them to ſuppoſe they ſee and perceiv ſuch things as were never perceived by the ſenſes, nor which the nature of things, nor the order of the world will permit. The power of this facultie of the minde is ſo great in us, that it often bringeth the whole bodie in ſubjection unto it.

For it is recorded in hiſtorie, that *Alexander* the Great ſitting at Table, and hearing *Timotheus* the Muſician ſing a Martial ſonnet unto his Cythern, that hee preſently leaped from the table, and called for arms; but when again the Muſician mollified his tune, hee returned to the table and ſate down as before. The power of imagination cauſſed by muſical harmonie, was ſo great, that it ſubjected to it the courage of the World's conqueror, by whoſe various motion, it would now as it were cauſ him to run headlong to arms, and then pacifie and quiet him, and ſo cauſ him to return to his chair and banquetting again. And there was one whoſoever it was, who ſom few years agon, ſeeing the Turk dance on a rope on high, with both his feet faſtned in a baſin, turned his eies from ſo dangerous a ſight or ſpectacle, although came of purpoſe to ſee it, and ſtricken with ſuch fear, that his bodie ſhook and heart quaked, for fear leſt that by ſudden falling down headlong hee ſhould break his neck. Manie looking down from an high and loftie place, are ſo ſtricken with fear, that ſuddenly they fall down headlong, beeing ſo overcom and bound with the imagination of the danger, that their own ſtrength is not able to ſuſtain them. Therefore it manifeſtly appeareth that God hath dealt moſt graciouſly and loveingly with us, who unto this power of imagination, hath joined another, that is, the facultie or power of reaſon and underſtanding; which diſcerning falſ dangers and perils from true, doth ſuſtain and hold up a man that hee may not bee overthrown by them.

After this appeareth and approacheth to perform his function, the facultie of Reaſon, beeing the Prince of all the principal faculties of the ſoul; which bringeth together, compoſeth, joineth, and reduceth all the ſimple and divided forms or images of things into one heap, that by divideing, collecting, and reaſoning it might diſcern and trie truth from falſhood. What Reaſon is.

This facultie of Underſtanding or Reaſon is ſubject to no facultie or inſtrument of the bodie, but is free, and penetrateth into everie ſecret, intricate and hidden thing with an incredible celeritie: by which a man ſee'th what will follow, perceiveth the originals and cauſſes of things, is not ignorant of the proceedings of things; hee compareth things that are paſt with thoſe that are preſent and to com, decreeing what to follow, and what to avoid. This bridleth and with-holdeth the furious motions of the minde, bridleth the overhaſtie motions of the tongue, and admoniſheth the ſpeaker that before the words paſs out of his mouth, hee ought with diligence and diſcretion to ponder and conſider the thing whereof hee is about to ſpeak. The functions of Reaſon.

After Reaſon and Judgment followeth Memorie, which keeping and conſerving all forms and images that it receiveth of the ſenſes, and which Reaſon ſhall appoint, and as a faithful keeper and conſerver, receiveth all things, and imprinteth and ſealeth them as well by their own virtue and power, as by the impulſion and adherence of thoſe things in the bodie of the brain, without anie impreſſion of the matter; that when occaſion ſerveth, wee may bring them forth there-hence as out of a treaſurie or ſtore-houſ. For otherwiſe, to what purpoſe were it to read, hear, and note ſo manie things, unleſs wee were able to keep and retain them in minde by the care and cuſtodie of the Memorie or Brain? Therefore aſſuredly God hath given us this onely remedie and preſervative againſt the oblivion and ignorance of things, which although of it ſelf and of its own nature it bee of greater efficacie, yet by dailie and often meditation it is trimmed and made more exquiſite and perfect. And hence it was that the Antients termed wiſdom the daughter of memorie and experience. Manie have ſuppoſed that the manſion or ſeat of the Memorie, is in the hinder part, or in the ventricle of the *Cerebellum*; by reaſon that it is apt to receiv the forms of things, becauſ of the engrafted drineſs and hardneſs thereof. What memorie is. Wiſdom the daughter of memorie and experience.

## CHAP. XII.

*Of the natural excrements in general, and eſpecially of thoſe that the childe or infant beeing in the womb excludeth.*

BEfore I declare what excrements the infant excludeth in the womb and by what paſſages, I think it good to ſpeak of the excrements which all men do naturally void. All that is called an excrement which nature is accuſtomed to ſeparate and caſt out from the laudable aud nouriſhing juice. There are manie kindes of thoſe excrements. What an excrement is.

The firſt is of the firſt concoction, which is performed in the ſtomach, which beeing driven down into the inteſtines or guts, is voided by the fundament. The excrement of the firſt concoction.

The ſecond commeth from the Liver and it uſually is three-fold, or of three kindes; one choler-

The excrement of the second concoction is triple.

cholerick, whereof a great portion is sent into the bladder of the gall, that by sweating out there-hence, it might stir up the expulsive facultie of the guts to expel and exclude the excrements. The other is like unto whay, which goeth with the blood into the veins, and is as it were a *vehicle* thereto to bring it unto all the parts of the bodie, and into everie capillar vein for to nourish the whole bodie; and after it hath performed that function, it is partly expelled by sweat, and partly sent into the bladder, and so excluded with the urine. The third is the melancholick excrement which beeing drawn by the milt, the purer and thinner part thereof goeth into the nourishment of the milt, and after the remnant is partly purged out downwards by the Hemorrhoidal veins, and partly sent to the orifice of the stomach, to instimulate and provoke the appetite. The last commeth of the last concoction, which is absolved in the habit of the bodie, and breathed out, partly by insensible transpiration, is partly consumed by sweating, and partly floweth out by the evident and manifest passages that are proper to everie part: as it happeneth in the brain before all other parts; for it doth unload it self of this kinde of excrement by the passages of the nose, mouth, ears, eies, palat-bone and sutures of the scul.

The excrement of the third concoction is triple.

Therefore if anie of those excrements bee staied altogether, or anie longer then it is meet they should, the default is to bee amended by diet and medicine. Furthermore, there are other sorts of excrements not natural, of which wee have entreated at large in our book of the pestilence.

The use of the navel-string.

When the infant is in the mother's womb, until hee is fully and absolutely formed in all the lineaments of his bodie, hee send's forth his urine by the passage of the navel or *urachus*. But a little before the time of childe-birth, the *urachus* is closed, and then the man-childe voideth his urine by the conduit of the yard, and the woman-childe by the neck of the womb. This urine is gathered together and contained in the coat *Chorion* or *Allantoïdes*, together with the other excrements, that is to say, sweat, and such whayish superfluities of the menstrual matter, for the more easie bearing up of the floteing or swimming childe. But in the time of childe-birth, when the infant by kicking breaketh the membranes, those humors run out, which when the midwives perceiv, they take it as a certain sign that the childe is at hand. For if the infant com forth together with those waters, the birth is like to bee more easie, and with the better succes; for the neck of the womb and all the genitals are so by their moisture relaxed and made slipperie, that by the endevor and stirring of the infant the birth will bee more easie, and with the better succes: contrariwise, if the infant bee not excluded before all these humors bee wholly flowed out and gon, but remaineth as it were in a drie place, presently through drines the neck of the womb and all the genitals will bee contracted and drawn together, so that the birth of the childe will bee verie difficult and hard, unles the neck of the womb, to amend that default, bee annointed with oil or som other relaxing liquor. Moreover, when the childe is in the womb, hee voideth no excrements by the fundament, unles it bee when at the time of the birth, the proper membranes and receptacles are bur'st by the striveing of the infant, for hee doth not take his meat at the mouth, wherefore the stomach is idle then, and doth not execute the office of turning the meats into *chylus*, nor of anie other concoction; wherefore nothing can go down from it into the guts. Neither have I seldom seen infants born without anie hole in their fundament, so that I have been constrained with a knife to cut in sunder the membrane or tunicle that grew over and stopped it. And how can such excrements bee engendred, when the childe beeing in the womb, is nourished with the more laudable portion of the menstrual blood? therefore the issue or childe is wont to yeeld or avoid two kindes or sorts of excrements, so long as hee is in the womb, that is to say, sweat and urine, in both which hee swim's; but they are separated by themselvs, by a certain tunicle called *Allantoïdes*, as it may bee seen in kids, dogs, sheep, and other brute beasts; for as much as in mankinde the tunicle *Chorion* and *Allantoïdes* or *Farciminalis*, bee all one membrane. If the woman bee great of a man-childe, shee is more merrie, strong, and better colored, all the time of her childe-bearing; but if of a woman-childe, shee is ill colored, becaus that women are not so hot as men.

The signs of speedie and easie deliverance.

Children born without a passage in their fundament.

*Aph. 42 sect. 5.*

The males begin to stir within three months and an half, but females after: if a woman conceiv a male-childe, shee hath all her right parts stronger to everie work: wherefore they do begin to set forwards their right foot first in going, and when they arise they lean on the right arm, the right dug will sooner swell and wax hard: the male-children stir more in the right side then in the left, and the female-children rather in the left then in the right side.

*Aph. 47 sect. 5.*

CHAP.

## CHAP. XIII.

*With what travail the Childe is brought into the world, and of the cauſe of this labor and travail.*

WHen the natural prefixed and preſcribed time of childe-birth is com, the childe beeing then grown greater, require's a greater quantitie of food: which when hee cannot receiv in ſufficient meaſure by his navel, with great labor and ſtriving hee endeavoreth to get forth: therefore then hee is mooved with a ſtronger violence, and doth break the membranes wherein hee is contained. Then the womb, becauſ it is not able to endure ſuch violent motions, nor ſuſtain or hold up the childe anie longer, by reaſon that the conceptacles of the membranes are broken aſunder, is relaxed. and then the childe purſuing the air which hee feeleth to enter in at the mouth of the womb, which then is verie wide and gapeing, is carried with his head downwards, and ſo commeth into the world with great pain both unto it ſelf, and alſo unto his mother, by reaſon of the tenderneſs of his bodie, and alſo by reaſon of the nervous neck of his mother's womb, and ſeparation of the bone called *Os Ilium* from the bone called *Os ſacrum*. For unleſs thoſe bones were drawn in ſunder, how could not onely twins that cleav faſt together, but alſo one childe alone, com forth at ſo narrow a paſſage as the neck of the womb is? Not onely reaſon, but alſo experience confirmeth it; for I opened the bodies of women preſently after they have died of travail in childe-birth, in whom I have found the bones of *Ilium* to bee drawn the bredth of ones finger from *Os ſacrum*: and moreover, in manie unto whom I have been called, beeing in great extremitie of difficult and hard travail, I have not onely heard, but alſo felt the bones to cracle and make a noiſ, when I laid my hand upon the coccyx or rump, by the violence of the diſtention. Alſo honeſt matrons have declared unto mee that they themſelvs, a few daies before the birth, have felt and heard the noiſ of thoſe bones ſeparateing themſelvs one from another with great pain. Alſo a long time after the birth manie do feel great pain and ach about the region of the coccyx and *Os ſacrum*, ſo that when nature is not able to repair the diſſolved continuitie of the bones of *Ilium*, they are conſtrained to halt all the daies of their life after. But the bones of the ſhare called *Oſſa pubis*, I have never ſeen to bee ſeparated, as manie do alſo affirm. It is reported that in *Italie* the coccyx or rump in all maidens, that when they com to bee married thee may bear children with the leſſer travail in childe-birth; but this is a forged tale, for that bone beeing broken, is naturally and of its own accord repaired, and ioined together again with a *Callus*, whereby the birth of the childe will bee more difficult and hard.

Why the infant is born ſomtimes with his head forwards.

In the time of childe birth the bones of *Ilium* and *Os ſacrum* are drawn and extended one from another.

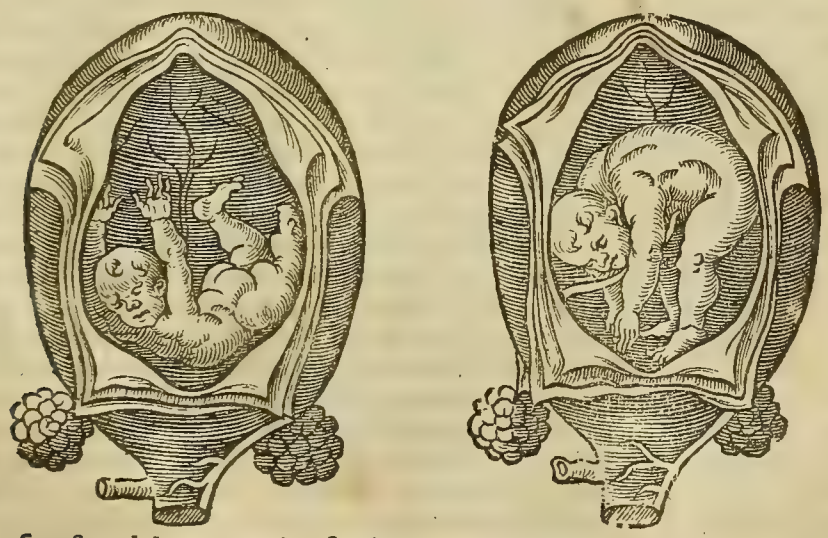
An Italian fable.

## CHAP. XIV.

*Of the ſituation of the infant in the womb.*

REaſon cannot ſhew the certain ſituation of the infant in the womb, for I have found it altogether uncertain, variable and diverſ both in liveing and dead women: in the dead by opening their bodies preſently after they were dead; and in the liveing by helping them by the induſtrie of my hand, when they have been in danger of periſhing by travail of childe-birth: for by putting my hand into the womb, I have felt the infant comming forth, ſomtimes with his feet forwards, ſomeimes with his hands, and ſomtimes with his hands and feet turned backwards, and ſomtimes forwards as the figure following plainly deſcribeth.

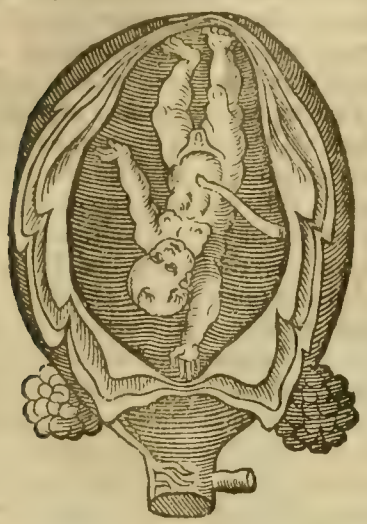
The ſituation of the infant in the womb is diverſ.



I have often found them comming forth with their knees forwards, and ſomtimes with one of the feet, and ſomtimes with their bellie forwards, their hands and feet beeing lifted upwards, as the former figure ſheweth at large.

*Som-*

*Somtimes I have found the infant comming with his feet downwards strideing a-wide, and somtimes headlong, stretching one of his arms downward out at length, and that was an Hermophrodite, as the figure following plainly declareth.*



*One time I observed in the birth of twins, that the one came with his head forwards, and the other with his feet, according as here I have thought good to describe them.*

In the bodies of women that died in travail of childe ¶ I have somtimes found children no bigger then if they had been but four months in the womb, situated in a round compass like a hoop, with their head bowed down to their knees, with both their hands under the knees, and their heels close to their buttocks. And moreover, I protest before God that I found a childe beeing yet alive in the bodie of his mother (whom I opened so soon as shee was dead) lying all along stretched out, with his face upwards, and the palms of his hands joined together, as if hee were at praier.

## CHAP. XV.

*Which is the legitimate and natural, and which the illegitimate or unnatural time of childe-birth.*

Mankinde hath no certain time of bringing forth young

TO all liveing creatures, except man, the time of conception and bringing forth their young is certain and definite; but the issue of man commeth into the world, somtimes in the seventh, somtimes in the eighth; and somtimes, which is most frequent, in the ninth month; somtimes in the tenth month; yea somtimes in the beginning of the eleventh month. *Massurinus* report's that *Lucius Papyrius* the Pretor, the second heir commencing a suit, gave the possession of the goods away from him, seeing the mother of the childe affirmed that shee went thirteen months therewith, beeing there is no certain definite time of childe-birth. The childe that is born in the sixt month cannot bee long-lived, becaus that at that time all his bodie or members are not perfectly finished, or absolutely formed. In the seventh month it is prooved by reason and experience that the infant may bee long-lived. But in the eighth month it is seldom or never long-lived: the reason thereof is, as the Astronomers suppose, becaus that at that time Saturn ruleth, whose coldness and driness is contrarie to the original of life: but yet the physical reason is more true; for the physicians say that the childe in the womb doth oftentimes in the seventh month strive to bee set at libertie from the inclosure of the womb, and therefore it contendeth and laboreth greatly, and so with laboring amd striving it becommeth weak, that all the time of the eighth month it cannot recover his strength again, whereby it may renew his accustomed use of striving, and that som by such laboring and striving hurt themselvs, and so die. Yet som strong and lustie women are thought to bring forth their children, beeing livelie and strong, on the eighth month, as *Aristotle* testifieth of the *Egiptians*, the Poets of the inhabitants of the Isle of *Naxus*, and manie of the Spaniards. Furthermore I cannot sufficientjy marvel, that the womb, which all the time of childe-bearing is so closed together, that one can scarce put a *probe* into it, unless it bee by superfœtation, or when it is open for a short time to purge it self, that presently before the time of childe-birth, it should gape and wax so wide, that the infant may pass through it, anp presently after it to close again as if it had never been opened. But becaus that the travail of the first time of childe-birth is wont to bee verie difficult and grievous, I think it not unmeet that all women, a little before the time of their first travail, annoint and relax their privie parts with the unguent here described. ℞. *sper. ceti,* ℥ii. *ol. amigd. dul.* ℥iv. *ceræ alb. & medul.*

Why the childe is scarce alive in the eighth month.

*Lib. 4. de hist. anim. cap. 7.*

*medul. cervin.* ℥iii. *axung. anſ.& gallin. an.* ℥i. *tereb. venet.* ℥ii. make thereof an ointment to annoint the thighs, ſhare, privie-parts and genitals. Furthermore, it ſhall not bee unprofitable, to make a truſs or girdle of moſt thin and gentle dog-skin, which beeing alſo annointed with the ſame unguent, may ſerv verie neceſſarily for the better carrying of the infant in the womb. Alſo baths that are made of the decoction of mollifying herbs, are alſo verie profitable to relax the privie parts a little before the time of the birth. That is ſuppoſed to bee a natural and eaſie birth, when the infant commeth forth with his head forwards, preſently following the flux of water; and that is more difficult, when the infant commeth with his feet forwards: all the other waies are moſt difficult. Therefore Mid-wives are to bee admoniſhed that as often as they perceiv the childe to bee comming forth none of thoſe waies, but either with his bellie or his back forwards, as it were double; or elſ with his hands and feet together, or with his head forwards, and one of his hands ſtretched out, that they ſhould turn it, and draw it out by the feet; for the doing whereof, if they bee not ſufficient, let them crave the aſſiſtance and help of ſom expert Chirurgian.

The natural and eaſie childbirth.

## CHAP. XVI.

*Signs of the birth at hand.*

THere will bee great pain under the navel, and at the groins, and ſpreading therehence toward the *Vertebræ* of the loins, and then eſpecially when they are drawn back from the *Os ſacrum*, the bones *Ilia* and the *Coccyx* are thruſt outward, the genitals ſwell with pain, and a certain Fever-like ſhakeing invade's the bodie, the face waxeth red by reaſon of the endeavor of nature, armed unto the expulſion of the infant. And when theſe ſigns appear, let all things bee prepared readie to the childe-birth. Therefore firſt of all let the woman that is in travail bee placed in her bed conveniently, neither with her face upwards, nor ſitting, but with her back upwards and ſomwhat high, that ſhee may breath at more libertie, and have the more power or ſtrength to labor. Therefore ſhee ought to have her legs wide one from another, and crooked, or her heels ſomwhat bowed up towards her buttocks, ſo that ſhee may lean on a ſtaff that muſt beee placed overthwart the bed. There are ſom that do travail in a ſtool or a chair made for the ſame purpoſe: others ſtanding upright on their feet, and leaning on the poaſt or piller of the bed. But you muſt take diligent heed that you do not exhort or perſwade the woman in travail to ſtrive or labor to expel the birth before the fore-named ſigns thereof do manifeſtly ſhew that it is at hand. For by ſuch labor or pains ſhee might bee wearied or ſo weakned, that when ſhee ſhould ſtrive or labor, ſhee ſhall have no power or ſtrength ſo to do. If all theſe things do fall out well in the childe-birth, the buſineſs is to be committed to nature, and to the Midwife. And the woman with childe muſt onely bee admoniſhed that when ſhee feeleth verie ſtrong pain, that ſhee preſently therewith ſtrive with moſt ſtrong expreſſion, ſhutting her mouth and noſe if ſhee pleaſ, and at the ſame time let the Midwife with her hands force the infant from above downwards. But if the birth bee more difficult and painful, by reaſon that the waters wherein the infant lay are flown out long before, and the womb bee drie, this ointment following is to bee prepared. ℞, *butyri recentis ſine ſale in aquâ artemeſiæ loti,* ℥ii. *mucaginis ficuum, ſemin. lini & althææ, cum aquâ ſabinæ extractæ, an.* ℥ß. *olei liliorum,* ℥i. make thereof an ointment, wherewith let the Midwife often annoint the ſecret parts. Alſo this powder following may bee prepared. ℞. *Cinnamon. cort. caſſiæ fiſtul. dictamni an.* ℥iß. *ſacch. albi ad pondus omnium*: make thereof a moſt ſubtil and fine powder. Let the woman that is in extremitie by reaſon of difficult and painful travail in childe-birth, take half an ounce thereof at a time, with the decoction of lin-ſeed, or in white wine, for it will cauſ more ſpeedie and eaſie deliverance of the childe.

How the woman that travaileth in childbirth muſt bee placed in her bed.

An unction to ſupplie the defect of the waters that are flowed out too long before the birth.

A powder to cauſ ſpeedie deliverance in childe-birth.

Moreover let the midwife annoint her hands with this ointment following as often as ſhee putteth them into the neck of the womb, and therewith alſo annoint the parts about it. ℞. *olei ex ſeminibus lini,* ℥iß. *olei de caſtoreo,* ℥ß. *galliæ moſchatæ,* ℥iii. *ladani* ℥i. make thereof a liniment. Moreover, you may provoke ſneeſing, by putting a little pepper or white Hellebore in powder into the noſtrils. Lin-ſeed beaten, and given in potion, with the water of Mugwurt and Savine, is ſuppoſed to cauſ ſpeedie deliverance. Alſo the medicine following is commended for the ſame purpoſe. ℞. *corticis caſſiæ fiſtul, conquaſſatæ* ℥ii. *cicer. rub.* mß. *bullant cum vino albo & aquâ ſufficienti, ſub finem addendo ſabinæ,* ℥ii. *in colaturâ pro doſi adde cinam.* ℥ß. *croci gr.* vi. make thereof a potion, which beeing taken, let ſneeſing bee provoked, as it is above-ſaid, and let her ſhut or cloſe her mouth and noſtrils.

*Aph.* 35. & 45. *ſect.* 5. *e*

A potion cauſing ſpeedie deliverance.

Manie times it happeneth that the infant commeth into the world out of the womb, haveing his head covered or wrapped about with a portion of the ſecundine or tunicle wherein it is incloſed, eſpecially, when by the much, ſtrong, and happie ſtriveing of the mother, hee commeth forth together with the water wherein it lieth in the womb, and then the midwives propheſie or fore-tell that the childe ſhall bee happie, becauſ hee is born as it were with a hood on his head. But I ſuppoſe that it doth betoken health of bodie both to the infant

fant and alſo to his mother; for it is a token of eaſie deliverance. For when the birth is difficult and painful, the childe never bringeth that membrane out with him, but it remaineth behinde in the paſſage of the gentitals or ſecret parts, becauſ they are narrow. For even ſo the Snake or Adder when ſhee ſhould caſt her skin thereby to renew her age, creepeth through ſom narrow or ſtrait paſſage. Preſently after birth, the woman ſo delivered muſt take two or three ſpoonfuls of the oil of ſweet almonds extracted without fire, and tempered with ſugar. Som will rather uſe the yelks of egs with ſugar, ſom the wine called hypocras, others culliſes or gellie: but alwaies divers things are to bee uſed, according as the patient or the woman in childe-bed ſhall bee grieved, and as the Phyſician ſhall give counſel, both to eaſ and aſſwage the furious torments and pain of the throws, to recover her ſtrength and nouriſh her.

What a woman in travail muſt take preſently after her deliverance.

The cauſ of the after-throws.

Throws com preſently after the birth of the childe, becauſ that then the veines (nature beeing wholly converted to expulſion) caſt out the reliques of the menſtrual matter that hath been ſuppreſſed for the ſpace of nine months, into the womb with great violence, which becauſ they are groſs, ſlimie and dreggiſh, cannot com forth without great pain both to the veines from whence they com, and alſo unto the womb whereinto they go: alſo then by the converſion of that portion thereof that remaineth into winde, and by the undiſcreet admiſſion of the air in the time of the childe-birth, the womb and all the ſecret parts will ſwel, unleſs it bee prevented with ſom digeſting, repelling or mollifying oil, or by artificial rowling of the parts about the bellie.

## CHAP. XVII.

*What is to bee don preſently after the childe is born.*

Why the ſecundine or after-birth muſt bee taken away preſently after the birth of the childe.

PReſently after the childe is born, the midwife muſt draw away the ſecundine or after-birth, as gently as ſhee can: but if ſhee cannot, let her put her hands into the womb, and ſo draw it out, ſeparateing it from the other parts; for otherwiſe if it ſhould continue longer, it would bee more difficult to bee gotten out, becauſ that preſently after the birth, the orifice of the womb is drawn together and cloſed, and then all the ſecundine muſt bee taken from the childe. Therefore the navel-ſtring muſt bee tied with a double thred an inch from the bellie. Let not the knot bee too hard, leſt that part of the navel-ſtring which is without the knot ſhould fall away ſooner then it ought, neither too ſlack or looſ, leſt that an exceeding and mortal flux of blood ſhould follow after it is cut off, and leſt that through it (that is to ſay the navel-ſtring) the cold air ſhould enter into childes-bodie. When the knot is ſo made, the navel-ſtring muſt bee cut in ſunder the bredth of two fingers beneath it with a ſharp knife. Upon the ſection you muſt applie a double linnen cloth dipped in oil of Roſes, or of ſweet Almonds, to mitigate the pain; for ſo within a few daies after, that which is beneath the knot will fall away beeing deſtitute of life and nouriſhment, by reaſon that the vein and arterie are tied ſo cloſe, that no life nor nouriſhment can com unto it: commonly all midwives do let it lie unto the bare bellie of the infant, whereof commeth grievous pain and gripeing, by reaſon of the coldneſs thereof which dieth by little and little as deſtitute of vital heat. But it were far better to roul it in ſoft cotton or lint, until it bee mortified, and ſo fall away.

The bindeing of the childes navel-ſtring after the birth.

Thoſe midwives do unadviſedly, who ſo ſoon as the infant is born do preſently tie the navel-ſtring and cut it off, not looking firſt for the voiding of the ſecundine. When all theſe things are don, the infant muſt bee wiped, cleanſed and rubbed from all filth and excrement with oil of Roſes or Myrtles. For thereby the pores of the skin will bee better ſhut, and the habit of the bodie the more ſtrengthened.

There bee ſom that waſh infants at that time in warm water and red wine, and afterwards annoint them with the fore-named oils. Others waſh them not with wine alone, but boil therein red Roſes and the leavs of Myrtles, adding thereto a little ſalt; and then uſeing this lotion for the ſpace of five or ſix daies, they not onely waſh away the filth, but alſo reſolv and digeſt, if there bee anie hard or contuſed place in the infant's tender bodie, by reaſon of the hard travail and labor in childe-birth. Their toes and fingers muſt bee handled, drawn aſunder and bowed, and the joints of the arms and legs muſt bee extended and bowed for manie daies and often; that thereby that portion of the excremental humor that remaineth in the joints, by motion may bee heated and reſolved. If there bee anie default in the members, either in conformation, conſtruction or ſocietie with thoſe that are adjoining to them, it muſt bee corrected or amended with ſpeed. Moreover, you muſt look whether anie of the natural paſſages bee ſtopped, or covered with a membrane, as it often happeneth. For if anie ſuch cover or ſtop the orifices of the ears, noſtrils, mouth, yard or womb, it muſt bee cut in ſunder by the Chirurgion, and the paſſage muſt bee kept open by putting in of tents, peſſaries or doſels, leſt otherwiſe they ſhould join together again after they are cut. If hee have one finger more then hee ſhould naturally, if his his fingers do cleav cloſe together, like unto the feet of a Goos or Duck, if the ligamental membrane that is under the tongue bee more ſhort

The defaults that are commonly in children newly born.

The defaults of conformation muſt bee ſpeedily amended.

and

and ſtiffer then it ought, that the infant cannot ſuck, nor in time to com, ſpeak, by reaſon thereof; and if there bee anie other thing contrarie to nature, it muſt bee all amended by the induſtrie of ſom expert Chirurgian.

Manie times in children newly born, there ſticketh on the inner ſide of their mouth and on their tongue, a certain chalkie ſubſtance, both in color and in conſiſtence; this affect proceeding from the diſtemperature of the mouth, the French-men call it the white Cancer. It will not permit the infant to ſuck, and will ſhortly breed and degenerate into ulcers that will creep into the jawes, and even unto the throat, and unleſs it bee cleanſed ſpeedily, will bee their death. For remedie whereof, it muſt bee cleanſed by deterſives, as with a linnen cloth bound to a little ſtick, and dipped in a medicine of an indifferent conſiſtence made with oil of ſweet almonds, honie and ſugar. For by rubbing this gently on it, the filth may bee mollified, and ſo cleanſed or waſhed awaie.

Remedies for the Cancer in a childe's mouth.

Moreover it will bee verie meet and convenient to give the infant one ſpoonful of oil of almonds, to make his bellie looſ and ſlipperie, to aſſwage the roughneſs of the weaſon and gullet, and to diſſolv the tough phlegm, which cauſſeth a cough, and ſomtimes difficultie of breathing. If the eie-lids cleav together, or if they bee joined together, or agglutinated to the coats *cornea* or *adnata*; if the waterie tumor called *hydrocephalos* affect the head, then muſt they bee cured by the proper remedies formerly preſcribed, againſt each diſeaſ.

Manie from their birth have ſpots or marks, which the common people of France call *Signes*, that is, marks or ſigns. Som of theſe are plain and equal with the skin, others are raiſed up in little tumors, and like unto warts, ſom have hairs upon them, manie times they are ſmooth, black or pale; yet for the moſt part red. When they riſe in the face, they ſpread abroad thereon manie times with great deformitie. Manie think the cauſ thereof to bee a certain portion of the menſtrual matter cleaving to the ſides of the womb, comming of a freſh flux, if happily a man do yet uſe copulation with the woman, or elſ diſtilling out of the veins into the womb, mixed and concorporated with the ſeeds at that time when they are congealed, infecting this or that part of the iſſue; beeing drawn out of the ſeminal bodie, with their own color. Women refer the cauſ thereof unto their longing when they are with childe; which may imprint the image of the thing they long for or deſire, in the childe or iſſue that is not as yet formed (as the force and power of imagination in humane bodies is verie great:) but when the childe is formed, no imagination is able to leav the impreſſion of anie thing in it, no more then it could cauſ horns to grow on the head of King *Chypus* as hee ſlept preſently after hee was returned from attentively beholding Bulls fighting together. Som of thoſe ſpots bee cureable, others not; as thoſe that are great, and thoſe that are on the lips, noſtrils, and eie-lids. But thoſe that are like unto warts, becauſ they are partakers of a certain malign qualitie and melancholick matter, which may bee irritated by indeavouring to cure them, are not to bee medled with at all, for beeing troubled and angered, they ſoon turn into a Cancer (which they call *Noli me tangere*). Thoſe that are cureable are ſmall, and in ſuch parts as they may bee dealt withall without danger. Therefore they muſt bee pierced through by the roots with a needle and a thread, and ſo beeing lifted up by the ends of the thread, they muſt bee cut awaie, and the wound that remaineth muſt bee cured according to the general method of wounds.

An old fable of King *Chypus*.

Which uncureable.

Which and how they are cureable.

There are ſom that ſuppoſe the red ſpots that are raiſed up into little knobs and bunches, may bee waſhed awaie and conſumed by rubbing and annointing them often with menſtrual blood, or the blood of the ſecundine or after-birth. Thoſe that are hairie and ſomwhat raiſed up like unto a *Want* or Mouſ, muſt bee pierced through the roots in three or four places, and ſtraightly bound, ſo that at length beeing deſtitute of life and nutriment, they may fall awaie. after they are faln awaie, the ulcer that remaineth muſt bee cured as other ulcers are. If there bee anie ſuperfluous fleſh remaining, it muſt bee taken awaie by applying *Ægyptiacum*, or the powder of Mercurie, and ſuch like: but if it bee doubted that it commeth from the root of the tumor that may happily remain, it muſt bee burned awaie by the root with oil of vitriol or *aqua fortis*.

There is alſo an other kinde or ſort of ſpots, of a livid or violet-color, comming eſpecially in the face about the lips, with a ſoft, flack, lax, thin, and unpainful tumor, and the veins as if they were varicous round about it. This kinde of tumor groweth greater when it ariſeth on children that are wayward and crying, and in men of riper years that are cholerick and angrie, and then it will bee of a diverſ color, like unto a lappet or flap of fleſh that hangeth over the Turkie-cock's *bill*. When they have don crying, or ceaſed their anger, the tumor will return to his own natural color again. But you muſt not attempt to cure it in people that are of theſe conditions.

## CHAP. XVIII.

*How to pull awaie the ſecundine or after-birth.*

Why it is called the ſecundine.

I Suppoſe that they are called ſecundines, becauſ they do griev the woman that is with childe the ſecond time, as it were a ſecond birth: for if there bee ſeveral children in the womb at once, and of different ſexes, they then have everie one their ſeveral ſecundines, which thing is verie neceſſarie to bee known by all midwives. For they do manie times remain behinde in the womb when the childe is born, either by reaſon of the weakneſs of the woman in travail, which by contending and laboring for the birth of her childe, hath ſpent all her ſtrength: or elſ by a tumor riſing ſuddenly in the neck of the womb, by reaſon of the long and difficult birth, and the cold air unadviſedly permitted to ſtrike into the orifice of the womb. For ſo the liberties of the waies or paſſages are ſtopped and made more narrow, ſo that nothing can com forth: or elſ becauſ they are doubled and foulded in the womb, and the waters gon out from them with the infant, ſo that they remain as it were in a drie place: or elſ becauſ they yet ſtick in the womb by the knots of the veins and arteries, which commonly happeneth in thoſe that are delivered before their time. For even as apples which are not ripe, cannot bee pulled from the tree but by violence; but when they are ripe, they will fall off of their own accord: ſo the ſecundine before the natural time of the birth can hardly bee pulled awaie but by violence; but at the prefixed natural time of the birth, it may eaſily bee drawn awaie.

The cauſſes of the ſtaying of the ſecundines.

Accidents that follow the ſtaying of the ſecundines.

Manie and grievous accidents follow the ſtaying of the ſecundine; as ſuffocation of the womb, often ſwounding, by reaſon that groſs vapors ariſe from the putrefaction unto the midriff, heart and brain: therefore they muſt bee pulled awaie with ſpeed from the womb, gently handling the navel, if it may bee ſo poſſibly don. But if it cannot bee don ſo, the woman muſt bee placed as ſhee was wont when that the childe will not com forth naturally, but muſt bee drawn forth by art. Therefore the midwife having her hand annointed with oil, muſt put it gently into the womb, and finding out the navel-ſtring, muſt follow it untill it com unto the ſecundine, and if it do as yet cleav to the womb by the cotylidons, ſhee muſt ſhake and move it gently up and down, that ſo when it is ſhaked and looſed, ſhee may draw it out gently; but if it ſhould bee drawn with violence, it were to bee feared leſt that the womb ſhould alſo follow: for by violent attraction ſom of the veſſels, and alſo ſom of the nervous ligaments, whereby the womb is faſtened on each ſide, may bee rent, whereof followeth corruption of blood ſhed out of the veſſels, and thence commeth inflammation, an abſceſs or a mortal gangrene. Neither is there leſs danger of a convulſion by reaſon of the breaking of the nervous bodies, neither is there anie leſs danger of the falling down of the womb. If that there bee anie knots or clods of blood remaining together with the ſecundine, the Midwife muſt draw them out one by one, ſo that not anie may bee left behinde.

The manner of drawing out the ſecundines that remain after the birth.

The cauſ of the falling down of the womb.

The accidents that com of the violent pulling of the womb, together with the ſecundine.

Som women have voided their ſecundine, when it could not bee drawn forth by anie meanes, long after the birth of the childe, by the neck of their womb, piece-meal, rotten and corrupted, with manie grievous and painfull accidents. Alſo it ſhall bee verie requiſite to provoke the indeavor of the expulſive facultie by ſternutatories, aromatick fomentations of the neck of the womb, by mollifying injections: and contrariwiſe, by applying ſuch things to the noſtrils as yeeld a rank ſavor or ſmell, with a potion made of mug-wort and bay-berries taken in honie and wine mixed together, or with half a dram of the powder of ſavin, or with the hair of a womans head, burnt and beaten to powder, and given to drink; and to conclude, with all things that provoke the tearms or courſes.

## CHAP. XIX.

*What things muſt bee given to the infant by the mouth, before hee bee permitted to ſuck the teat or dug.*

To draw fleam from the childe's mouth.

IT will bee verie profitable to rub all the inner ſide of the childe's mouth and palat gently with treacle and honie, or the oil of ſweet almonds extracted without fire, and if you can, to cauſ it to ſwallow ſom of thoſe things: for thereby much flegmatick moiſture will bee drawn from the mouth, and alſo will bee mooved or provoked to bee vomited up from the ſtomach; for if theſe excremental humors ſhould bee mixed with the milk that is ſucked, they would corrupt it, and then the vapors that ariſe from the corrupted milk unto the brain would infer moſt pernicious accidents. And you may know that there are manie excremental things in the ſtomach and guts of children by this, becauſ that ſo ſoon as they com into the world, and often before they ſuck milk or take anie other thing, they void downwards manie excrements diverſly colored, as yellow, green, and black. Therefore manie, that they may ſpeedily evacuate the matter that cauſeth the fretting of the guts, do not onely

onely miniſter thoſe things fore-named, but alſo ſom laxative ſyrup, as that that is made of damask-Roſes. But before the infant bee put to ſuck the mother, it is fitting to preſs ſom milk out of her breſt into its mouth, that ſo the fibres of the ſtomach may by little and little accuſtom themſelvs to draw in the milk. Milk ſoon corrupted in a flegmatick ſtomach.

## CHAP. XX.

*That mothers ought to nurſ or give ſuck unto their own children.*

THat all mothers would nurſ their own children were greatly to bee wiſhed: for the mother's milk is far more familiar nouriſhment for the infant then that of anie Nurſ: for it is nothing elſ but the ſame blood made white in the duggs, wherewith before it was nouriſhed in the womb. For the mother ought not to give the childe ſuck for the ſpace of a few daies after the birth, but firſt to expect the perfect expurgation and avoiding of the excremental humors. And in the mean time let her cauſ her breaſts to bee ſucked of another, or manie other children, or of ſom wholſom or ſober maid, whereby the milk may bee drawn by little and little unto her breaſts, and alſo by little and little purified. The mother's milk is moſt familiar for the childe.

For a certain ſpace after the birth, the milk will bee troubled, and the humors of the bodie mooved: ſo that by long ſtaying in the duggs, it will ſeem to degenerate from its naturall goodneſs, as the groſneſs of it is ſomwhat congealed, the manifeſt heat in touching, and the yellow color thereof teſtifieth evidently. Therefore it is neceſſarie that others ſhould com in place thereof when it is ſucked out, wherewith the infant may bee nouriſhed. But if the mother or the Nurſ chance to take anie diſeaſ, as a Fever, Scouring, or anie ſuch like, let her give the childe to another, to give it ſuck, leſt that the childe chance to take the Nurſes diſeaſes. And moreover, mothers ought to nurſ their own children, becauſ for the moſt part they are far more vigilant and careful in bringing up and attending their children, then hired and mercenarie Nurſes, which do not ſo much regard the infant, as the gain they ſhal have by the keeping of it, for the moſt part. Thoſe that do not nurſ their own children, cannot rightly bee termed mothers: for they do not abſolutely perform the dutie of a mother unto their childe, as *Marcus Aurelius* the Roman Emperor was wont to ſay. For it is a certain unnatural, imperfect and half kinde of a mother's dutie, to bear a childe, and preſently to abandon or put it awaie as if it were forſaken: to nouriſh and feed a thing in their womb (which they neither know nor ſee) with their own blood, and then not to nouriſh it when they ſee it in the world alive, a creature or reaſonable ſoul, now requireing the help and ſuſtentation of the mother. The diſeaſ of the Nurſ is participated unto the childe. *Gel. lib. 12. c. 1.*

## CHAP. XXI.

*Of the choice of Nurſes.*

MAnie husbands take ſuch pittie on their tender wives, that they provide Nurſes for their children, that unto the paines that they have ſuſtained in bearing them, they may not alſo add the trouble of nurſing them: wherefore ſuch a Nurſ muſt bee choſen which hath had two or three children. For the duggs which have been alreadie ſucked and accuſtomed to bee filled, have the veines and arteries more large and capable to receiv the more milk. In the choice of a Nurſ there is ten things to bee conſidered verie diligently. as, her age, the habit of her bodie, her behaviour, the condition of her milk, the form, not onely of her duggs or breaſts, but alſo of her teats or nipples, the time from her childe-birth, the ſex of her laſt infant or childe, that ſhee bee not with childe, that ſhee bee ſound and in perfect health. As concerning her age; ſhee ought not to bee under twentie five years, nor above thirtie five: the time that is between is the time of ſtrength, more temperate, and more wholſom and healthie, and leſs abounding with excremental humors. And becauſ her bodie doth not then grow or increaſ, ſhee muſt of neceſſitie have the more aboundance of blood. After thirtie five years in manie the menſtrual fluxes do ceaſ, and therefore it is to bee ſuppoſed that they have the leſs nutriment for children. The beſt age of a Nurſ.

The Nurſ muſt alſo bee of a good habit, or ſquare or wel-ſet bodie, her breaſt broad, her color lively, not fat, nor lean, but well-made, her fleſh not ſoft and tender, but thick, and hard or ſtrong, whereby ſhee may bee the more able to indure watching and taking of pains about the childe; ſhee muſt not have a red or freckled face, but brown or ſomwhat ſhadowed or mixed with redneſs: for truly ſuch women are more hot then thoſe that are red in the face, by reaſon whereof they muſt needs concoct and turn their meat the better into blood. For according to the judgment of *Sextus Cheronenſis*, as blackiſh or brown ground is more fertil then the white: even ſo a brown woman hath more ſtore of milk. You muſt look wel on her head, leſt ſhee ſhould have the ſcurf or running ſores; ſee that her teeth bee not foul The beſt habit of bodie in a Nurſ. *Lib. de inf. nutr.*

foul or rotten, nor her breath ſtinking, nor no ulcer nor ſore about her bodie, and that ſhee bee not born of goutie or leprous Parents.

Of what behavior the Nurſ muſt bee.

Shee ought to bee quick and diligent in keeping the childe neat and clean, chaſte, ſober, merrie, alwaies laughing and ſmiling on her Infant, often ſinging unto it, and ſpeaking diſtinctly and plainly, for ſhee is the onely Miſtreſs to teach the childe to ſpeak. Let her bee wel-mannered, becauſ the manners of the Nurſ are participated unto the Infant together with the milk. For the whelps of dogs, if they do ſuck Wolves or Lioneſſes, will becom more fierce and cruel then otherwiſe they would. Contrariwiſe, the Lions whelps wil leave their ſavagneneſs and fierceneſs, if that they bee brought up and nouriſhed with the milk of anie Bitch, or other tame beaſt. If a Goat give a Lamb ſuck, the ſame Lamb's-wooll will bee more hard then others: contrariewiſe, if a Sheep give a Kid ſuck, the ſame Kids hair will bee more ſoft then another Kid's-hair. Shee ought to bee ſober, and the rather for this cauſ, becauſ manie Nurſes beeing overloaden with wine and banqueting, often ſet their children unto their breaſts to ſuck, and then fall aſleep, and ſo ſuddenly ſtrangle or choak them.

Why the Nurſ muſt abſtain from copulation.

Shee muſt abſtain from copulation: for copulation troubleth and mooveth the humors and the blood, and therefore the milk it ſelf; and it diminiſheth the quantitie of milk, becauſ it provoketh the menſtruall flux, and cauſeth the milk to have a certain ſtrong and virous qualitie, ſuch as wee may perceiv to breath from them that are incenſed with the fervent luſt and deſire of venerie. And moreover, becauſ that thereby they may happen to bee with childe, whereof inſueth diſcommoditie both to her own childe that is within her bodie, and alſo to the nurſ-childe: to the nurſ-childe, becauſ that the milk that it ſucketh will bee worſ and more depraved then otherwiſe it would bee, by reaſon that the more laudable blood after the conception remaineth about the womb, for the nutriment and increaſing of the infant in the womb; and the more impure blood goeth into the dugs, which breedeth impure or unclean milk: but to the conceived childe, becauſ it will cauſ it to have ſcarcitie of food; for, ſo much as the ſucking-childe ſucketh, ſo much the childe conceived in the womb wanteth.

What dugs a Nurſ ought to have.

Alſo ſhee ought to have a broad breaſt, and her dugs indifferently big, not flack or hanging, but of a middle conſiſtence, between ſoft and hard; for ſuch dugs will concoct the blood into milk the better, becauſ that in firm fleſh the heat is more ſtrong and compact. You may by touching trie whether the fleſh bee ſolid and firm, as alſo by the diſperſing of the veines, eaſily to bee ſeen by reaſon of their ſwelling and blewneſs, through the dugs, as it were into manie ſtreams or little rivelets; for in fleſh that is looſ and flack, they lie hidden. Thoſe dugs that are of a competent bigneſs, receiv or contain no more milk then is ſufficient to nouriſh the infant. In thoſe dugs that are great and hard, the milk is as it were ſuffocated, ſtopped or bound in, ſo that the childe in ſucking can ſcarce draw it out. and moreover, if the dugs bee hard, the childe putting his mouth to the breaſt, may ſtrike his noſe againſt it, and ſo hurt it, whereby hee may either refuſe to ſuck, or if hee doth proceed to ſuck, by continual ſucking, and placeing of his noſe on the hard breaſt, it may becom flat, and the noſtrils turned upwards, to his great deformitie, when hee ſhall com to age. If the teates or nipples of the dugs do ſtand ſomwhat low or depreſſed inwards on the tops of the dugs, the childe can hardly take them between its lips, therefore his ſucking will bee verie laborious. If the nipples or teates bee verie big, they will ſo fill all his mouth, that hee cannot well uſe his tongue in ſucking or in ſwallowing the milk.

What is to bee obſerved in the milk.

Wee may judg of or know the nature and condition of the milk, by the quantitie, qualitie, color, ſavor and taſte; when the quantitie of the milk is ſo little, that it will not ſuffice to nouriſh the infant, it cannot bee good and laudable; for it argueth ſom diſtemperature either of the whole bodie, or at leaſt of the dugs, eſpecially a hot and drie diſtemperature. But when it ſuperaboundeth, and is more then the infant can ſpend, it exhauſteth the juice of the Nurſes bodie; and when it cannot all bee drawn out by the infant, it cluttereth, and congealeth or corrupteth in the dugs. Yet I would rather wiſh it to abound, then to bee defective, for the ſuperabounding quantitie may bee preſſed out before the childe bee ſet to the breaſt.

The laudable conſiſtence of milk.

That milk that is of a mean conſiſtence between thick and thin, is eſteemed to bee the beſt. For it betokeneth the ſtrength and vigor of the facultie that ingendereth it in the breaſts. Therefore if one drop of the milk bee laid on the nail of ones thumb, beeing firſt made verie clean and fair, if the thumb bee not mooved, and it run off the nail, it ſignifieth that it is waterie-milk: but if it ſtick to the nail, although the end of the thumb bee bowed downwards, it ſheweth that it is too groſs and thick: but if it remain on the nail ſo long as you hold it upright, and fall from it when you hold it a little aſide or downwards by little and little, it ſheweth it is verie good milk. And that which is exquiſitely white, is beſt of all. For the milk is no other thing then blood made white.

Why the milk ought to bee verie white.

Therefore, if it bee of anie other color, it argueth a default in the blood: ſo that if it bee brown, it betokeneth melancholick blood; if it bee yellow, it ſignifieth cholerick blood; if it it bee wan and pale, it betokeneth phlegmatick blood; if it bee ſomwhat red, it argueth the

weakneſs

weakneſs of the facultie that engendreth the milk. It ought to bee ſweet, fragrant, and pleaſant in ſmell; for if it ſtrike into the noſtrils with a certain ſharpneſs, as for the moſt part the milk of women that have red hair and little freckles on their faces doth, it prognoſticates a hot and cholerick nature: if with a certain ſowerneſs, it portendeth a cold and melancholick nature. In taſte it ought to bee ſweet, and as it were ſugered, for the bitter, ſaltiſh, ſharp, and ſtiptick, is naught. And here I cannot but admire the providence of nature, which hath cauſſed the blood wherewith the childe ſhould bee nouriſhed to bee turned into milk: which unleſs it were ſo, who is hee that would not turn his face from, and abhor ſo grievous and terrible a ſpectacle of the childes mouth ſo imbrued and beſmeared with blood? What mother or Nurſ would not bee amazed at everie moment with the fear of the blood ſo often ſhed out, or ſucked by the infant for his nouriſhment? Moreover, wee ſhould want two helps of ſuſtentation, that is to ſay, Butter and Cheeſ.

Why a woman that hath red hair, or freckles on her face cannot bee a good Nurſ.

Neither ought the childe to bee permitted to ſuck within five or ſix daies after it is born, both for the reaſon before alledged, and alſo becauſ hee hath need of ſo much time to reſt quiet, and eaſ himſelf after the pains hee hath ſuſtained in his birth: in the mean ſeaſon the mother muſt have her breaſts drawn by ſom maid that drinketh no wine, or elſ ſhee may ſuck or draw them her ſelf with an artificiall inſtrument which I will deſcribe hereafter.

That Nurſ that hath born a man childe is to bee preferred before another, becauſ her milk is the better concocted, the heat of the male-childe doubling the mother's heat. And moreover, the women that are great with childe of a male-childe, are better colored, and in better ſtrength, and better able to do anie thing all the time of their greatneſs, which prooveth the ſame: and moreover the blood is more laudable, and the milk better. Furthermore, it behooveth the Nurſ to bee brought on bed, or to travail at her juſt and prefixed or natural time: for when the childe is born before his time of ſom inward cauſ, it argueth that there is ſom default lurking and hidden in the bodie and humors thereof.

Why? that Nurſ that hath born a man-childe is to bee preferred before another.

Why ſhee cannot bee a good Nurſ whoſe childe was born before the time.

## CHAP. XXII.

*What diet the Nurſ ought to uſe, and in what ſituation ſhee ought to place the infant in the Cradle.*

BOth in eating, drinking, ſleeping, watching, excerciſing and reſting, the Nurſes diet muſt bee divers, according as the nature of the childe both in habit and temperature ſhall bee: as for example, if the childe bee altogether of a more hot blood, the Nurſ both in feeding and ordering her ſelf ought to follow a cooling diet. In general, let her eat meats of good juice, moderate in quantitie and qualitie, let her live in a pure and clear air, let her abſtain from all ſpices, and all ſalted and ſpiced meats, and all ſharp things, wine, eſpecially that which is not allayed or mixed with water, and carnal copulation with a man, let her avoid all perturbations of the minde, but anger eſpecially, let her uſe moderate exerciſe, unleſs it bee the exerciſe of her armes and upper parts, rather then the leggs and lower parts, whereby the greater attraction of the blood, that muſt bee turned into milk, may bee made towards the dugs. Let her place her childe ſo in the Cradle that his head may bee higher then all the bodie, that ſo the excremental humors may bee the better ſent from the brain unto the paſſages that are beneath it. Let her ſwathe it ſo as the neck and all the back-bone may bee ſtraight and equal. As long as the childe ſucketh, and is not fed with ſtronger meat, it is better to lay him alwaie on his back, then anie other waie, for the back is, as it were the Keel in a ſhip, the ground-work and foundation of all the whole bodie, whereon the infant may ſafely and eaſily reſt, But if hee lie on the ſide, it were danger leſt that the bones of the ribs beeing ſoft and tender, not ſtrong enough, and united with ſlack bands, ſhould bow under the weight of the reſt, and ſo wax crooked, whereby the infant might becom crook-backed. But when hee beginneth to breed teeth, and to bee fed with more ſtrong meat, and alſo the bones and connexions of them begin to wax more firm and hard, hee muſt bee laied one while one this ſide, another while on that, and now and then alſo on his back. And the more hee groweth, the more let him bee accuſtomed to lie on his ſides; and as hee lieth in the Cradle, let him bee turned unto that place whereat the light commeth in, leſt that otherwiſe hee may becom purblinde, for the eie of its own nature is bright and light-ſom, and therefore alwaies deſireth the light, and abhoreth darkneſs, for all things are moſt delighted with their like, and ſhun their contraries. Therefore vnleſs the light com's directly into the childe's face, hee turneth himſelf everie waie beeing verie ſorrowful, and ſtriveth to turn his head and eies that hee may have the light; and that often turning and rowling of his eies at length groweth into a cuſtom that cannot bee left: and ſo it commeth to paſs that the infant doth either becom pur-blind, if hee ſet his eies ſtedfaſtly on one thing, or elſ his eies do becom trembling, alwaies turning and unſtable, if hee caſt his eies on manie things that are round about him: which is the reaſon that Nurſes, beeing taught by experience, cauſ over the head of the childe lying in the Cradle, an arch or vault of Wickers covered with cloath to bee made, thereby to reſtrain, direct, and eſtabliſh the uncertain and wandering motions of the childe's eies.

Anger greatly hurteth the Nurſ.

The exereiſe of the arms is beſt for the Nurſ. How the childe ſhould bee placed in the Cradle.

Why an arch of wickers muſt bee made over the childe's head lying in the Cradle.

Why a squint-eied Nurs causseth the childe to bee squint-eied.

If the Nurs bee squint-eied, thee cannot look upon the childe but side-waies, whereof it commeth to pass that the childe beeing moist, tender, flexible, and prone to anie thing with his bodie, and so likewise with his eie, by a long and dailie custom unto his Nurse's sight, doth soon take the like custom to look after that sort also, which afterwards hee cannot leav or alter. For those evil things that wee learn in our youth, do stick firmly by us; but the good qualities are easily changed into worse. In the eies of those that are squint-eied, those two muscles which do draw the eies to the greater or lesser corner, are chiefly or more frequently mooved. Therefore either of these beeing confirmed in their turning aside by long use, as the exercise of their proper office increaseth the strength, soon overcom's the contrarie or withstanding muscles, called the *Antagonists*, and bring's them into their subjection, so that, will they, nill they, they bring the eie unto this or that corner as they list.

How children becom left-handed.

So children becom left-handed, when they permit their right hand to languish with idleness and sluggishness, and strengthen their left hand with continual use and motion to do everie action therewithall, and so bring by the exercise thereof more nutriment unto that part. But if men (as som affirm) beeing of ripe years, and in their full growth, by dailie societie and companie of those that are lame and halt do also halt, not mindeing so to do, but it commeth against their wills, and when they think nothing thereof, why should not the like happen in children, whose soft and tender substance is as flexible and pliant as wax unto everie impression? Moreover, children, at they becom lame and crook-back't; so do they also becom squint-eied by the hereditarie default of their parents.

## CHAP. XXIII.

*How to make pap for children.*

Three laudable conditions of pap.

How the meal must bee prepared to make the pap withall.

Why the meal wherewith the pap must bee made, must first bee boiled or baked.

*Lib. 1. de sanit. tuend.*

A cataplasm to relax the childe's bellie.

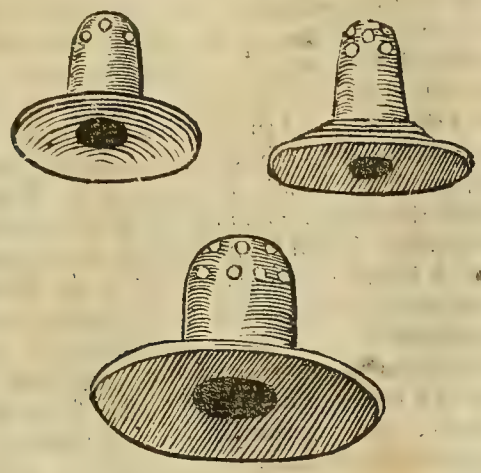
For the fretting of the guts in children.

For the ulcers of the nipples or teats.

PAp is a most meet food or meat for children; becaus they require moist nourishment, and it must bee answerable in thickness to the milk, that so it may not bee difficult to bee concocted or digested. For pap hath these three conditions, so that it bee made with wheaten flower, and that not crude, but boiled: let it bee put into a new earthen pot or pipkin, and so set into an oven at the time when bread is set thereinto to bee baked; and let it remain there until the bread bee baked and drawn out: for when it is so baked, it is less clammie and crude. Those that mix the meal crude with the milk, are constrained to abide one of these discommodities or other, either to give the meal gross and clammie unto the childe, if that the pap bee onely first boiled over the fire in a pipkin or skellet, so long as shall bee necessarie for the milk; hence com obstructions in the mesaraick veins, and in the small veins of the liver, fretting and worms in the guts, and the stone in the reins. Or elf they give the childe the milk, despoiled of its butterish and whayish portion, and the terrestrial, and cheef-like, or curd-like remaining, if the pap bee boiled so long as is necessarie for the meal: for the milk requireth not so great, neither can it suffer so long boiling as the meal. Those that do use crude meal, and have no hurt by it, are greatly bound to nature for so great a benefit. But *Galen* willeth children to bee nourished onely with the Nurse's milk, so long as the Nurs hath enough to nourish and feed it. And truly there are manie children that are contented with milk onely, and will receiv no pap until they are three months old. If the childe at anie time bee costive, and cannot void the excrements, let him have a cataplasm made with one dram of Aloës, of white and black Hellebore, of each fifteen grains, beeing all incorporated in as much of an Ox gall as is sufficient, and extended or spread on Cotton like unto a *pultis*, as broad as the palm of ones hand, and so applie it upon the navel warm: Moreover, this cataplasm hath also virtue to kill the worms in the bellie. Manie times children have fretting of the guts, that maketh them to crie, which commeth of cruditie. This must bee cured by applying unto the bellie sweatie or moist wooll, macerated in oil of Camomil.

If when the childe's teeth begin to grow, hee chance to bite the nipple of the Nurse's breast, there will bee an ulcer verie contumacious and hard to bee cured; becaus that the sucking of the childe, and the rubbing of the clothes do keep it alwaies raw; it must bee cured with fomenting it with Alum-water, and then presently after the fomentation putting thereupon a cover of lead, made like unto a hat, as they are here described, with manie holes in the top, whereat both the milk, and also the sanious matter that commeth from the ulcers may go out; for lead it self will cure ulcers.

*The figure of leaden Nipples to bee put upon the Nipple or Teat of the Nurſe, when it is ulcerated.*



Children may bee cauſſed to ceaſe their crying four manner of waies, that is to ſay, by giveing them the teat, by rocking them in a cradle, by ſinging unto them, and by changeing the clothes and ſwathes wherein they are wrapped. They muſt not bee rocked too violently in the cradle, leſt that the milk that is ſucked ſhould bee corrupted by the too violent motion, by reaſon whereof they muſt not bee handled violently anie other way, and not altogether prohibited, or not ſuffered to crie. For by crying the breaſt and lungs are dilated, and made bigger and wider; the natural parts the ſtronger, and the brain, noſtrils, the eies and mouth are purged, by the tears and filth that com from the eies and noſtrils. But they muſt not bee permitted to crie long or fiercely, for fear of breaking the production of the *Peritonæum*, and thereby cauſſing the falling down of the guts into the cod, which rupture is called of the Greeks *Enterocele*; or of the caul, which the Greeks call *Epiplocele*.

What moderate crying worketh in the infant.

What immoderate crying cauſſeth.

## CHAP. XXIV.

*Of the weaning of Children.*

MAnie are weaned in the eighteenth month, ſom in the twentieth; but all, or the moſt part, in the ſecond year: for then their teeth appear, by whoſe preſence nature ſeemeth to require ſom harder meat then milk or pap, wherewith children are delighted, and will feed more earneſtly thereon. But there is no certain time of weaning of children. For the teeth of ſom will appear ſooner and ſom later; for they are prepared of nature for no other purpoſe then to chaw the meat. If children bee weaned before their teeth appear, and bee fed with meat that is ſomwhat hard and ſolid, according to the judgment of *Avicen*, they are incident to manie diſeaſes comming through cruditie; becauſ the ſtomach is yet but weak, and wanteth that preparation of the meats which is made in the mouth by chawing; which men of ripe years cannot want without offence: when the childe is two years old, and the teeth appear, if the childe more vehemently deſire harder meats, and doth feed on them with pleaſure and good ſucceſs, hee may bee ſafely weaned; for it cannot bee ſuppoſed that hee hath this appetite of hard meats in vain, by the inſtinct of nature. Yet hee may not bee weaned without ſuch an appetite, if all other things bee correſpondent, that is to ſay, his teeth and age; for thoſe things are eaten without an appetite, cannot profit. But if the childe bee weak, ſicklie, or feeble, hee ought not to bee weaned. And when the meet time of weaning commeth, the Nurſe muſt now and then uſe him to the teat, whereby hee may leav it by little and little, and then let the teat bee annointed or rubbed with bitter things, as with Aloës, water of the infuſion of *Colocynthus*, or Wormwood, or with Muſtard, or Soot ſteeped in water, or ſuch like. Children that are ſcabbie in their heads, and over all their bodies, and which void much phlegm at their mouth and noſtrils, and manie excrements downwards, are like to bee ſtrong and ſound of bodie; for ſo they are purged of excremental humors: contrariwiſe, thoſe that are clean and fair of bodie, gather the matter of manie diſeaſes in their bodies, which in proceſs of time will break forth and appear. Certainly, by the ſudden falling of ſuch matters into the back-bone, may becom crook-back't.

When children muſt bee weaned.

Why children muſt not bee weaned before their teeth appear.

How children muſt bee weaned.

What children are ſtrong and ſound of bodie.

An often cauſ of ſudden crookedneſs.

CHAP.

## CHAP. XXV.

*By what signs it may bee known whether the childe in the womb bee dead or alive.*

A most certain sign of the childe dead in the womb.

IF neither the Chirurgians hand, not the mother can perceiv the infant to moov, if the waters bee flowed out, and the secundine com forth, you may certainly affirm that the infant is dead in the womb, for this is the most infallible sign of all others: for becaus the childe in the womb doth breath but by the arterie of the navel, and the breath is received by the *Cotyledon* of the arteries of the womb, it must of necessitie com to pass that when the secundine is separated from the infant, no air nor breath can com unto it. Wherefore so often as the secundine is excluded before the childe, you may take it for a certain token of the death thereof: when the childe is dead, it will bee more heavie to the mother then it was before when it was alive, becaus it is now no more sustained by the spirits and faculties wherewith before it was governed and ruled, for so wee see dead men to bee heavier then those that are alive, and men that are weak though hunger and famin to bee heavier then when they are well refreshed, and also when the mother encline's her bodie anie way, the infant falleth that way also even as it were a stone. The mother is also vexed with sharp pain from the privities even to the navel, with a perpetual desire of makeing water, and going to stool, becaus that nature is wholly busied in the expulsion or avoidance of that which is dead: for that which is alive will expel the dead so far as it can from it self, becaus the one is altogether different from the other; but likeness, if anie thing, conjoin's and unite's things together: the genitals are cold in touching, and the mother complaineth that shee feeleth a coldness in her womb, by reason that the heat of the infant is extinguished, wherewith before her heat was doubled: manie filthie excrements com from her; and also the mother's breath stinketh, shee swoundeth often, all which for the most part happen within three daies after the death of the childe: for the infant's bodie will sooner corrupt in the mother's womb then it would in the open air, becaus that, according to the judgment of *Galen*, all hot and moist things, beeing in like manner enclosed in a hot and moist place, especially if by reason of the thickness or straitness of the place they cannot receiv the air, will speedily corrupt. Now by the riseing up of such vapors from the dead unto the brain and heart, such accidents may soon follow, her face will bee clean altered, seeming livid and ghastly, her dugs fall and hang loos and lank, and her bellie will bee more hard and swollen then it was before. In all bodies so putrefying, the natural heat vanisheth away, and in place thereof succeedeth a preternatural, by the working whereof the putrefied and dissolved humors are stirred up into vapors, and converted into winde, and those vapors, becaus they possess and fill more space and room (for naturalists say that of one part of water ten parts of air are made) do so puff up the putrefied bodie into a greater bigness. You may note the same thing in bodies that are gangrenate, for they cast forth manie sharp vapors, yet nevertheless they are swollen and puffed up.

When the childe is dead in the womb hee is more heavie then hee was before beeing alive.

That which is alive will not suffer that which is dead.

*Lib. de tumorib.*

Why the bellie of a woman will bee more big when the childe is dead within her then it was before when it was alive.

Now so soon as the Chirurgian shall know that the childe is dead by all these fore-named signs, hee shall with all diligence endeavor to save the mother so speedily as hee can, and if the Physicians cannot prevail with potions, baths, fumigations, sternutatories, vomits, and liniments appointed to expel the infant, let him prepare himself to the work following; but first let him consider the strength of the woman, for if hee perceiv that shee bee weak and feeble by the smalness of her pulse, by her small, seldom and cold breathing, and by the altered and death-like color in her face, by her cold sweats, and by the coldness of the extreme parts, let him abstain from the work, and onely affirm that shee will die shortly; contrariwise, if her strength bee yet good, let him with all confidence and industrie deliver her on this wise from the danger of death.

The signs of a woman that is weak.

## CHA. XXVI.

*Of the Chirurgical extractions of the childe from the womb either dead or alive.*

THerefore first of all the air of the chamber must bee made temperate, and reduced unto a certain mediocritie, so that it may neither bee too hot nor too cold. Then shee must bee aptly placed, that is to say, overthwart the bed-side, with her buttocks somwhat high, haveing a hard stuffed pillow or boulster under them, so that shee may bee in a mean figure of situation, neither sitting altogether upright, nor altogether lying along on her back; for so shee may rest quietly, and draw her breath with eas, neither shall the ligaments of the womb bee extended so as they would if shee lay upright on her back, her heels must bee drawn up close to her buttocks, and there bound with broad and soft linnen rowlers. The rowler must first com about her neck, and then cros-wise over her shoulders, and so to the feet, and there it must cros again, and so bee rowled about the legs thighs, and then it must bee brought up to the neck again, and there made fast, so that shee may

After what sort the woman in travail must bee placed when the childe beeing dead in her womb, must bee drawn out.

How shee must bee bound.

may not bee able to moov her ſelf, even as one ſhould be tied when he is to bee cut of the ſtone. But that ſhee may not bee wearied, or leſt that her bodie ſhould yeeld or ſink down as the Chirurgian draweth the bodie of the infant from her, and ſo hinder the work, let him cauſ her feet to bee ſet againſt the ſide of the bed, and then let ſom of the ſtrong ſtanders by hold her faſt by the legs and ſhoulders. Then that the air may not enter into the womb, and that the work may bee don with the more decencie, her privie parts and thighs muſt bee covered with a warm double linnen cloth. Then muſt the Chirurgian, haveing his nails cloſely pared, and his rings (if hee wear anie) drawn off his fingers, and his arms naked, bare, and well annointed with oil, gently draw the flaps of the neck of the womb aſunder, and then let him put his hand gently into the mouth of the womb, haveing firſt made it gentle and ſlipperie with much oil; and when his hand is in, let him finde out the form and fituation of the childe, whether it bee one or two, or whether it bee a Mole or not. And when hee findeth that hee commeth naturally, with his head toward the mouth or orifice of the womb, hee muſt lift him up gently, and ſo turn him that his feet may com forwards, and when hee hath brought his feet forwards, hee muſt draw one of them gently out at the neck of the womb, and then hee muſt binde it with ſom broad and ſoft or ſilken band a little above the heel with an indifferent ſlick knot, and when hee hath ſo bound it, hee muſt put it up again into the womb, then hee muſt put his hand in again, and finde out the other foot, and draw it alſo out of the womb, and when it is out of the womb, let him draw out the other again whereunto hee had before tied the one end of the band, and when hee hath them both out, let him join them both cloſe together, and ſo by by little and little let him draw all the whole bodie from the womb. Alſo other women or Midwives may help the endeavor of the Chirurgian, by preſſing the patient's bellie with their hands downwards as the infant goeth out: and the woman herſelf by holding her breath, and cloſeing her mouth and noſtrils, and by driveing her breath downwards with great violence, may verie much help the expulſion. I wiſh him to put back the foot into the womb again after hee hath tied it, becauſ if that hee ſhould permit it to remain in the neck of the womb, it would hinder the entrance of his hand when hee putteth it in to draw out the other. But if there bee two children in the womb at once, let the Chirurgian take heed leſt that hee take not of either of them a leg, for by drawing them ſo, hee ſhall profit nothing at all, and yet exceedingly hurt the woman. Therefore that hee may not bee ſo deceived, when hee hath drawn out one foot and tied it, and put it up again, let him with his hand follow the band wherewithall the foot is tied, and ſo go unto the foot, and then to the groin of the childe and then from thence hee may ſoon finde out the other foot of the ſame childe: for if it ſhould happen otherwiſe, hee might draw the legs and the thighs out: but it would com no further, neither is it meet that hee ſhould com out with his arms along by his ſides, or bee drawn out on that ſort, but one of his arms muſt bee ſtretched out above his head, ond the other down by his ſide, for otherwiſe the orifice of the womb when it were delivered of ſuch a groſs trunk, as it would bee when his bodie ſhould bee drawn out with his arms along by his ſides, would ſo ſhrink and draw it ſelf when the bodie ſhould com unto the neck, onely by the accord of nature requiring union, that it would ſtrangle and kill the infant, ſo that it cannot bee drawn there-hence unleſs it bee with a hook put under, or faſtned under his chin, in his mouth, or in the hollowneſs of his eie. But if the infant lieth as if hee would com with his hands forwards, or if his hands bee forth alreadie, ſo that it may ſeem hee may bee drawn forth eaſily that way, yet it muſt not bee ſo don; for ſo his head would double backwards over his ſhoulders, to the great danger of his mother. Once I was called unto the birth of an infant, whom the midwives had aſſaied to draw out by the arm, ſo that the arm had been ſo long forth that it was gangrenate, whereby the childe died; I told them preſently that his arm muſt bee put in again, and hee muſt bee turned otherwiſe. But when it could not bee put back by reaſon of the great ſwelling thereof, and alſo of the mother's genitals, I determined to cut it off with an inciſion knife, cutting the muſcles as near as I could to he ſhoulder, yet drawing the fleſh upwards, that when I had taken off the bone with a pair tof cutting pincers, it might com down again to cover the ſhivered end of the bone, leſt otherwiſe when it were thruſt in again into the womb, it might hurt the mother. Which beeing don, I turned him with his feet forwards, and drew him out as is before ſaid. But if the tumor either naturally or by ſom accident, that is to ſay, by putrefaction, which may perchance com, bee ſo great that hee cannot bee turned according to the Surgeon's intention, nor bee drawn out according as hee lieth, the tumor muſt bee diminiſhed, and then hee muſt bee drawn out as is afore-ſaid, and that meſt bee don at once. As for example, if the dead infant appear at the orifice of the womb, which our midwives call the Garland, when it gapeth, is open and dilated, but yet his head beeing more great and puffed up with winde ſo that it cannot com forth, as cauſſed to bee ſo through that diſeaſ which the Greeks call *Mucrophiſocephalos*, the Surgeon muſt faſten a hook under his chin, or in his mouth, or elſ in the hole of his eie, or elſ, which is better and more expedient, in the hinder part of his head. For when the ſcull is ſo opened there will bee a paſſage whereat the winde may paſs out, and ſo when the tumor falleth

How the Chirurgian ought to prepare himſelf and his patient to the drawing out of the childe from the womb.

How the infant that is dead in the womb muſt bee turned, bound and drawn out.

A caution to avoid ſtrangling of the infant in drawing out the bodie.

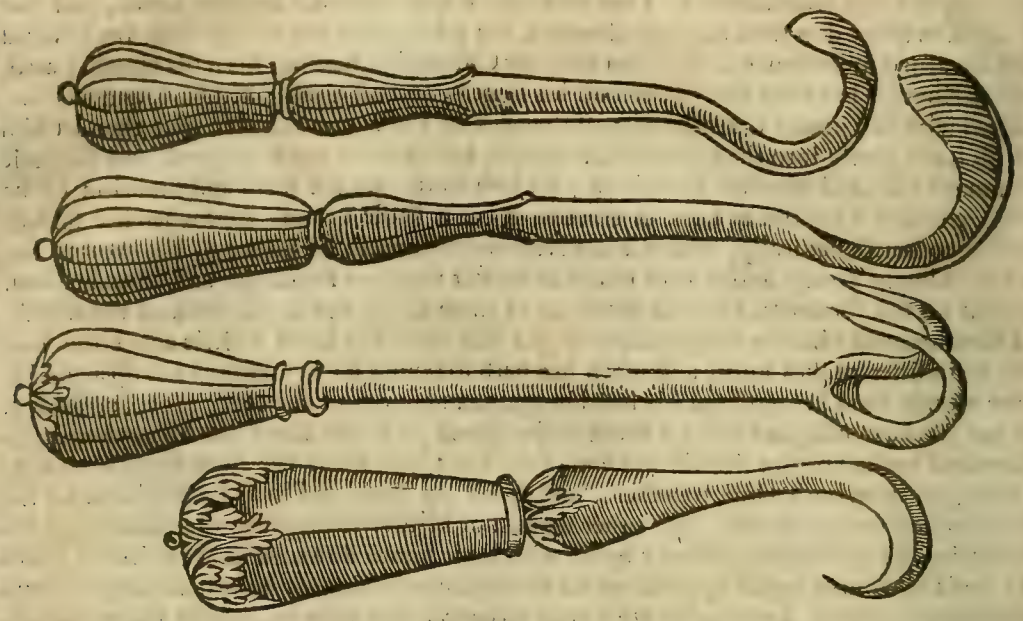
Why the childe muſt not bee drawn out with his hands forwards. An hiſtorie.

To diminiſh the winde wherewith the infant beeing dead in the womb, ſwelleth and is puffed up that hee cannot beegotten out of the womb.

and

and decreaſeth, let him draw the infant out by little and little; but not raſhly, leſt hee ſhould break that whereon hee hath taken hold: the figure of thoſe hooks is thus.

*The form of Hooks for drawing out the infant that is dead in the womb.*

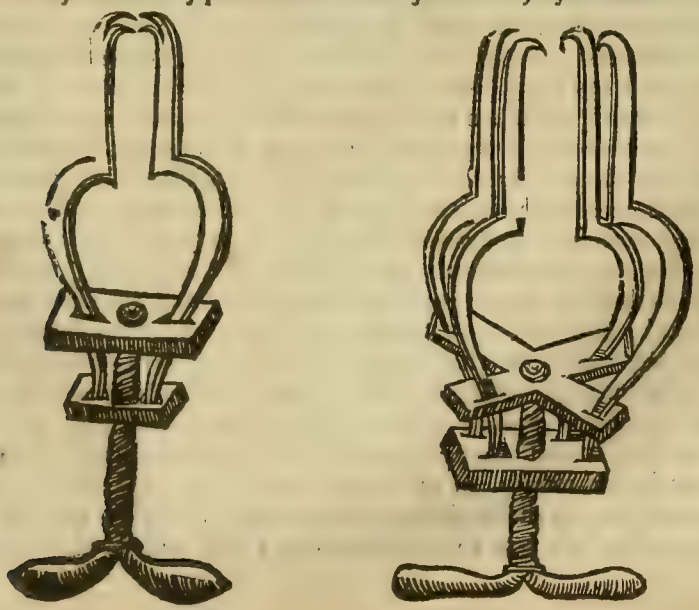


But if the breaſt bee troubled with the like fault, the hooks muſt bee faſtned about the chanel-bone: if there bee a Dropſie or a Tympanie in the bellie, the hooks muſt bee faſtned either in the ſhort ribs, that is to ſay, in the muſcles that are between the ribs, or eſpecially, if the diſeaſ do alſo deſcend into the feet, about the bones that are above the groin; or elſ putting the crooked knife here pictured into the womb with his left hand, let him make inciſion in the childe's bellie, and ſo get out all his entrals by the inciſion: for when hee is ſo bowelled, all the water that cauſſed the Dropſie will out. But the Surgeon muſt do none of all theſe things but when the childe is dead, and the woman that travelleth in ſuch danger that ſhee cannot handſomly bee holpen.

How the head of the infant, if it remain in the womb ſeparated from the bodie, may bee drawn out.

But if by any means it happeneth, that all the infant's members bee cut away by little and little, and that the head onely remaineth behinde in the womb, which I have ſomtimes againſt my will, and with great ſorrow ſeen; then the left hand, beeing annointed with oil of Lillies, or freſh Butter, muſt bee put into the womb, wherewith the Surgeon muſt finde out the mouth, putting his finger into it; then with his right hand hee muſt put up the hook (according to the direction of the left hand) gently, and by little and little, and ſo faſten it in the mouth, eie, or under the chin; and when hee hath firmly fixed or faſtened it, hee muſt therewith draw out the head by little and little, for fear of looſning or breaking the part whereon hee hath hold. In ſtead of this Hook, you may uſe the Inſtruments that are here deſcribed, which therefore I have taken out of the Surgerie of *Francis Dalechamps*; for they are ſo made, that they may eaſily take hold of a ſpherical and round bodie with the branches, as with fingers.

Gryphon's Talons, *that is to ſay, Inſtruments made to draw out the head of a dead infant that is ſeparated in the womb from the reſt of the bodie.*



But

But it is not verie easie to take hold on the head when it remaineth alone in the womb, by reason of the roundnes thereof, for it will slip and slide up and down, unless the bellie be pressed down, and on both sides, thereby to hold it unto the instrument, that it may with more facilitie take hold thereon.

Why the head beeing alone in the womb, is more difficult to bee out.

## CHAP. XXVII.

*What must bee don unto the woman in travail presently after her deliverance.*

THere is nothing so great an enemie to a woman in travail, especially to her whose childe is drawn away by violence, as cold: wherefore with all care and diligence shee must bee kept and defended from cold. For after the birth, her bodie beeing void and emptie, doth easily receiv the air that will enter into everie thing that is emptie, and hence shee waxeth cold, her womb is distended and puffed up, and the orifices of the vessels thereof are shut and closed, whereof commeth suppression of the after-birth, or other after-purgations. And thereof commeth manie grievous accidents, as hysterical suffocation, painful fretting of the guts, fevers, and other mortall diseases.

Cold an enemie to women in travail.

What accidents follow the taking of cold in a woman that is delivered of childe.

What woman soever will avoid that discommoditie, let her hold her legs or thighs across, for in so doing, those parts that were separated will bee joined and close together again. Let her bellie bee also bound or rowled with a ligature of an indifferent bredth and length, which may keep the cold air from the womb, and also press the blood out that is contained in all the substance thereof. Then give her som Capon-broth or Caudle, with Saffron, or with the powder called *Pulvis ducis*, or elc bread toasted and dipped in wine wherein spice is brewed, for to restore her strength, and to keep away the fretting of the guts. When the secundine is drawn out, and is yet hot from the womb, it must bee laid warm unto the region of the womb, especially in the Winter, but in the Summer, the hot skin of a weather newlie killed must bee laid unto the whole bellie, and unto the region of the loins. But then the curtains of the bed must bee kept dawn, and all the windows and doors of the chamber must bee kept shut with all diligence, that no cold air may com unto the woman that travaileth, but that shee may lie and take her rest quietly. The Weather's skin must be taken away after that it hath lien five or six hours, and then all the region of her bellie must bee annointed with the ointment following.

Secundines must bee laid to the region of the womb whil'st they bee warm.

℞. *spermatis Ceti*, ℥ii. *olei amygdal. dulcium & hypericon. an.* ℥iß. *sevi hircini*, ℥i. *olei myrtillor.* ℥i *ceræ novæ quantum sufficit*; make thereof an ointment, wherewith let her bee annointed twice in the daie: let a plaster of *Galbanum* bee applied to the navel, in the mid'st whereof put som few grains of Civet or Musk, so that the smel of the plaster may not strike up into her nostrils. Then let this medicine following bee applied, commonly called *Tela Gualterin*. ℞. *ceræ novæ*, ℥iv. *spermatis Ceti*, ℥iß. *terebinth. venetæ in aquâ rosaceâ lotæ*, ℥ii. *olei amygdal. dulcium & hypericonis an.* ℥i. *olei mastich. & myrtini, an.* ℥ß. *axungiæ cervi*, ℥iß. melt them altogether, and when they are melted, take it from the fire, and then dip a linnen cloth therein, as big as may serv to fit the region of the bellie, whereunto it is to bee applied. These remedies will keep the external region of the bellie from wrinkling.

Uluguents for the woman in travail that the region of the bellie may not bee wrinkled. The medicine called *Tela Gualterina.*

But of all other, the medicine following excelleth. ℞. *limacum rub.* ℔i. *florum anthos quart.* iiii. let them bee cut all in small peeces, and put into an earthen pot well nealed with lead, and close stopped, then let it bee set in the dung of horses for the space of fortie daies, and then bee pressed or strained, and let the liquor that is strained out bee kept in a glass well covered, and set in the Sun for the space of three or four daies, and therewith annoint the bellie of the woman that lieth in childe-bed. If shee bee greatly tormented with throws, let the powder following bee given unto her. ℞. *anisi conditi* ℥ii. *nucis moschat. cornu cervi ust. an.* ℥i.ß. *nucleorum dactyllor.* ℥iii. *ligni aloës & cinnamoni, an.* ℥ii. make thereof a most subtil powder, let her take ℥i. thereof at once with white wine warm. Or, ℞. *rad. confolidæ major.* ℥iß. *nucleorum persicorum, nucis moschat. an.* ℈ii. *carab.* ℈ß. *ambræ græca gra.* iv. make thereof a powder, let her take one dram thereof at a time with white wine, or if shee have a fever, with the broth of a Capon. Let there bee hot bags applied to the genitals, bellie and reins; these bags must bee made of millet and oats fried in a frying-pan with a little white wine.

A powder for the fretting of the guts.

But if through the violence of the extraction the genital parts bee torn, as antient writers affirm it hath com to pass, so that the two holes, as the two holes of the privie-parts and of the fundament have been torn into one, then that which is rent must bee stitched up, and the wound cured according to art. Which is a most unfortunate chance for the mother afterwards, for when shee shall travail again, shee cannot have her genital parts to extend and draw themselvs in again by reason of the scar. So that then it will bee needful that the Chirurgian shall again open the place that was cicatrized, for otherwise shee shall never bee delivered, although shee strive and contend never so much. I have don the like cure in two women that dwelt in Paris.

What must bee don when the groin is torn in childe-birth

CHAP.

## CHAP. XXVIII.

*What cure muſt bee uſed to the Dugs and Teats of thoſe that are brought to bed.*

To drive the milk downward.

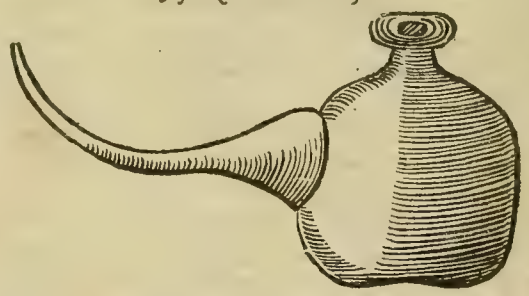
IF great ſtore and abundance of milk bee in the breaſt, and the woman be not willing to nurſ her own childe, they muſt bee annointed with the unguent following, to repel the milk, and cauſ it to bee expelled through the womb. ℞. *olei roſ. myrtini an.* ℥iii. *aceti roſat.* ℥i. incorporate them together, and therewith annointing beſprinkle them with the powder of Myrtils, and then aplie the plaſter following. ℞. *pulv. maſtichini nucis moſchat. an.* ℥ii. *nucis cupreſſi* ℥iii. *balauſt myrtil. an.* ℥iß. *Ireos, florent.* ℥ß. *olei myrtini* ℥iii. *terebinth. venetæ* ℥ii. *ceræ novæ quantum ſufficit*, make thereof a ſoft plaſter.

The leavs of brook-lime, creſſes and box boiled together in urine and vineger, are thought a preſent remedie for this purpoſe, that is to ſay, to draw the milk from the breaſts. And others take the clay that falleth down into the bottom of the trough wherein the grindeſtone, whereon ſwords are grownd, turneth, and mix it with oil of roſes, aud aplie it warm unto the dugs, which in ſhort ſpace, as it is thought, will aſſwage the pain, ſtay the inflammation, and drive the milk out of the dugs. The decoction of ground-Ivie, Peruwinkle, *Sage*, red Roſes, and roach Alum beeing prepared in oxycrate, and uſed in the form of a fomentation, is thought to perform the like effect: the like virtue have the lees of red wine, applied to the dugs with vineger, or the diſtilled water of unripe Pine-apples applied to the breaſts with linnen cloaths wet therein, or hemlock beaten and applied with the young and tender leavs of a gourd.

By what reaſon, and which way cupping-glaſſes beeing faſt'ned on the groin or above the navel, do draw milk out the of breaſts.

This medicine following is approoved by uſe: Take the leavs of *Sage*, Smallage, *Rue*, and Chervil, and cut or chop them verie ſmall, and incorporate them in vineger and oil of Roſes, and ſo aplie it warm to the breaſt, and renue it thrice a day. In the mean time let Cupping-glaſſes bee applied to the inner ſide of the thigh and groin, and alſo above the navel. For this is verie effectual to draw the milk out of the breaſts into the womb by the veins whereby the womb communicateth with the breaſts. Moreover, they may let children or little whelps ſuck their breaſts, whereby they may draw out the milk that is fixed faſt in their dugs, in ſteed whereof wee have invented this inſtrument of glaſs, wherewith, when the broader orifice is faſt'ned or placed on the breaſt or dug, and the pipe turned upwards towards her mouth, ſhee may ſuck her own breaſts her ſelf.

*The form of a little glaſs, which beeing put on the nipple, the woman may ſuck her own breaſts.*



Inſtead of this inſtrument, a viol of glaſs beeing firſt made warm, and the mouth thereof applied to the nipple or teat, by reaſon of the heat and wideneſs thereof will draw the milk forth into the bottom thereof, as it were by a certain ſucking. The after-purgations beeing firſt evacuated, which is don for the moſt part within twentie daies after the birth, if the woman bee not in danger of a fever, nor have anie other accident, let her enter into a bath, made of marjerom, mint, *ſage*, roſemarie, mugwurt, agrimonie, penniroyal, the flowrs of camomil, melilote, dill, beeing boiled in moſt pure and clear running water. All the day following let another ſuch like bath bee prepared, whereunto let theſe things following bee added. ℞. *farini fabarum & aven. an.* ℔.iii. *farin. orobi, lupinor. & gland. an.* ℔i. *aluminis roch.* ℥iv. *ſalis com.* ℔ii. *gallarum, nucum cupreſſi, an.* ℥iii. *roſar. rub.* m.vi. *caryophyl. nucum moſchat. an.* ℥iii. boil them all in common water, then ſew them all in a clean linnen cloth, as it were in a bag, and caſt them therein into the bath wherein Iron red hot hath been extinguiſhed, and let the woman that hath lately travailed ſit down therein ſo long as ſhee pleaſeth, and when ſhee commeth out let her bee laid warm in bed, and let her take ſom *preſerved* Orange-pill, or bread toaſted and dipped in Hippocras, or in wine brewed with ſpices, and then let her ſweat, if the ſweat will com forth of its own accord.

Aſtringent fomentations for the privie parts.

On the next day let aſtringent fomentations bee applied to the genitals on this wiſe prepared. ℞. *gallar. nucum cupreſſi, corticum granat. an.* ℥i *roſar. rub.* m i. *thymi, majoran. an.* m.ß. *alu. minis rochæ, ſalis com. an.* ℥ii. boil them all together in red wine, and make thereof a decoction for a fomentation, for the fore-named uſe. The diſtilled liquor following is verie excellent

excellent and effectual to confirm and to draw in the dugs, or anie other loose parts. Rx. *caryophyl. nucis moschat. nucum cupressi an.* ʒiß. *mastich.* ʒii. *alumin. roch.* ʒiß. *glandium & corticis querni, an.* ℔ß. *rosar. rubr* m.i. *cort. granat.* ʒii. *terræ sigillat.* ʒi. *cornu cervi usti* ʒß. *myrtillor. sanguinis dracon. an.* ʒi. *boli armini.* ʒii. *ireos florent.* ʒi. *sumach. berber. Hippuridis, an.* m.ß. *conquassentur omnia, & macerentur spatio duorum dierum, in* ℔.ß. *aquæ rosarum* ℔ii. *prunorum syvestr. mespilorum, pomorum quernorum, &* ℔.ß. *aquæ fabrorum, aceti denique fortiss.* ʒiv. afterward distil it over a gentle fire, and keep the distilled liquor for your use, wherewith let the parts bee fomented twice in a day. And after the fomentation, let wollen cloaths or stupes of linnen cloth bee dipped in the liquor, and then pressed out out and laid to the place. When all these things are don and past, the woman may again keep companie with her husband.

A distilled liquor for to draw together the dugs that are loose and flack.

## CHAP. XXIX.

*What the causses of difficult and painful travail in childe-birth are.*

THe fault dependeth somtimes on the mother, and somtimes on the infant or childe within the womb. On the mother, if shee bee more fat, if shee bee given to gormandize or great eating, if shee bee too lean or young, as *Savanarola* thinketh her to bee, that is great with childe at nine years of age, or unexpert, or more old, or weaker then shee should bee either by nature or by som accident: as by diseases that shee hath had a little before the time of childe-birth, or with a great flux of blood. But those that fall in travail before the ful and prefixed time, are verie difficult to deliver, becaus the fruit is yet unripe, and not readie or easie to bee delivered. If the neck or orifice of the womb bee narrow, either from the first conformation, or afterwards by som chance as by an ulcer cicatrized: or more hard and callous, by reason that it hath been torn before at the birth of som other childe, and so cicatrized again, so that if the cicatrized place bee not cut even in the moment of the deliverance, both the childe and the mother will bee in danger of death; also the rude handling of the midwife may hinder the free deliverance of the childe. Oftentimes women are letted in travail by shamefac'tness, by reason of the presence of som man, or hate to som woman there present.

The causses of the difficult childe-birth that are in the woman that travaileth.

The passions of the minde hinder the birth.

If the secundine bee pulled away sooner then it is necessarie, it may caus a great flux of blood to fill the womb, so that then it cannot perform his exclusive facultie, no otherwise then the bladder when it is distended by reason of over-abundance of water that is therein, cannot cast it forth, so that there is a stoppage of the urine. But the womb is much rather hindred, or the facultie of childe-birth is stopped or delaied, if together with the stopping of the secundine, there bee either a Mole or som other bodie contrarie to nature in the womb. In the secundines of two women whom I delivered of two children that were dead in their bodies, I found a great quantitie of sand like unto that which is found about the the banks of rivers, so that the gravel or sand that was in each secundine was a full pound in weight.

Also the infant may bee the occasion of difficult childe-birth, as, if too big; if it com overthwart, if it com with its face upwards, and its buttocks forwards, if it com with its feet and hands both forwards at once, if it bee dead and swoun by reason of corruption, if it bee monstrous, if it have two bodies or two heads, if it bee manifold or seven-fold, as *Albucrasis* affirmeth he hath seen, if there bee a mole annexed thereto, if it bee verie weak, if when the waters are flowed out, it doth not moov or stir, or offer its self to com forth. Yet notwithstanding, it happeneth somtimes that the fault is neither in the mother nor the childe, but in the air, which beeing cold, doth so binde, congeal and make stiff the genital parts, that they cannot bee relaxed: or, beeing contrariwise too hot, it weakeneth the woman that is in travail, by reason that it wasteth the spirits, wherein all the strength consisteth: or in the ignorant or unexpert midwife, who cannot artificially rule and govern the endeavors of the woman in travail.

The causses of difficult childbirth that are in the infant.

The external causes of difficult childe-birth.

The birth is wont to bee easie, if it bee in the due and perfixed natural time, if the childe offer himself lustily to com forth with his head forwards, presently after the waters are com forth, and the mother in like manner lustie and strong: those which are wont to bee troubled with verie difficult childe-birth, ought a little before the time of the birth, to go into an half-tub filled with the decoction of mollifying roots and seeds, to have their genitals, womb and neck thereof to bee annointed, with much oil, and the intestines that are full and loaded must bee unburthened of the excrements, and then the expulsive facultie provoked with a sharp glyster, that the tumors and swelling of the birth concurring therewith, the more easie exclusion may bee made. But I like it rather better, that the woman in travail should bee placed in a chair that hath the back thereof leaning backwards, then in her bed, but the chair must have a hole in the bottom, whereby the bones that must bee dilated in the birth, may have more freedom to close themselvs again.

Which is an easie birth.

What causseth easiness of child-birth.

## CHAP. XXX.

*The cauſ of Abortion or untimely birth.*

What Abortion is.

ABortion or untimely birth is one thing, and effluxion another. They call abortion the ſudden excluſion of the childe alreadie formed and alive, before the perfect maturitie thereof. But that is called effluxion, which is the falling down of ſeeds mixed together and coagulated but for the ſpace of a few daies, onely in the forms of membranes or tunicles, congealed blood, and of an unſhapen or deformed piece of fleſh; the Midwives of our countrie call it a falſ branch or bud. This effluxion is the cauſ of great paine and moſt bitter and cruel torment to the woman: leaving behinde it weakneſs of bodie far greater then if the childe were born at the due time. The cauſes of abortion or untimely birth, whereof the childe is called an abortive, are manie, as a great ſcouring, a ſtrangurie joined with heat and inflammation, ſharp fretting of the guts, a great and continual cough, exceeding vomiting, vehement labor in running, leaping, and dauncing, and by a great fall from on high, carrying of a great burthen, riding on a trotting-horſ, or in a Coach, by vehement, often and ardent copulation with men, or by a great blow or ſtroke on the bellie. For all theſe and ſuch like vehement and inordinate motions diſſolv the ligaments of the womb, and ſo cauſ abortion or untimely birth.

What Effluxion is.

Women are in more pain by reaſon of the effluxion then at the true birth.

The cauſes of Abortion.

Alſo whatſoever preſſeth or girdeth in the mothers bellie, and therewith alſo the womb that is within it, as are thoſe Ivorie or Whale-bone buskes, which women wear on their bodies, thereby to keep down their bellies; by theſe and ſuch like things the childe is letted or hindred from growing to his full ſtrength, ſo that by expreſſion, or as it were by compulſion, hee is often forced to com forth before the legitimate and lawful time. Thundering, the noiſ of the ſhooting of great Ordnance, the ſound, and vehement noiſ of the ringing of Bells conſtrain women to fall in travell before their time, eſpecially women that are young, whoſe bodies are ſoft, ſlack and tenderer then thoſe that bee of riper years. Long and great faſting, a great flux of blood, eſpecially when the infant is grown ſomwhat great: but if it bee but two moneths old, the danger is not ſo great, becauſ then hee needeth not ſo great quantitie of nouriſhment, alſo a long diſeaſ of the mother, which conſumeth the blood, cauſeth the childe to com forth beeing deſtitute of ſtore of nouriſhment before the fit time. Moreover, fulneſs, by reaſon of the eating great ſtore of meats, often maketh or cauſeth untimely birth; becauſ it depraveth the ſtrength, and preſſeth down the childe: as likewiſe the uſe of meats that are of an evil juice, which they luſt or long for. But bath's, becauſ they relax the ligaments of the womb, and hot houſes, for that the fervent and choaking air is received into the bodie, provoke the infant to ſtrive to go forth to take the cold air, and ſo cauſ abortion.

Girding of the bellie may cauſ untimely birth.

How bathes and hot houſes cauſ untimely birth.

What women ſoever, beeing indifferently well in their bodies, travail in the ſecond or third moneth without anie manifeſt cauſ, thoſe have the Cotylidones of their womb full of filth and matter, and cannot hold up the infant, by reaſon of the weight thereof, but are broken: Moreover, ſudden or continual perturbations of the minde, whether they bee through anger or fear, may cauſ women to travail before their time, and are accounted as the cauſes of abortions, for that they cauſ great and vehement trouble in the bodie. Thoſe women that are like to travail before their time, their dugs will wax little: therefore when a woman is great with childe, if her dugs ſuddenly wax ſmall or ſlender, it is a ſign that ſhee will travail before her time; the cauſ of ſuch ſhrinking of the dugs is, that the matter of the milk is drawn back into the womb, by reaſon that the infant wanteth nouriſhment to nouriſh & ſuccour it withall. Which ſcarcitie the infant not long abiding, ſtriveth to go forth to ſeek that abroad which hee cannot have within, for among the cauſes which do make the infant to com out of the womb, thoſe are moſt uſually named with *Hippocrates*, the neceſſitie of a more large nutriment and air.

*Hip. aph. 53. & 37 ſect. 5.*

*Hip. aph. 45. ſect. 5.*

*Hip. aph. 38. ſect. 5.*

Therefore if a woman that is with childe have one of her dugs ſmall, if ſhee have two children, ſhee is like to travail of one of them before the full and perfect time: ſo that if the right dug bee ſmall, it is a man-childe, but if it bee the left dug it is a female. Women are in far more pain when they bring forth their children before the time, then if it were at the full and due time; becauſ that whatſoever is contrarie to nature, is troubleſom, painfull, and alſo oftentimes dangerous. If there bee anie error committed at the firſt time of the childe-birth, it is commonly ſeen that it happeneth alwaies after at each time of childe-birth. Therefore, to fiinde out the cauſes of that error, you muſt take the counſel of ſom Phyſician, and after his counſel indeavour to amend the ſame. Truly this plaſter following beeing applied to the reines doth confirm the womb, and ſtay the infant therein. ℞. *ladani* ʒii. *galang.* ʒi. *nucis moſchat nucis cupreſſi, boli armeni, terræ ſigil. ſanguin. dracon, balauſt. an.* ʒß, *acatiæ, pſidiorum, bipociſtid. an.* ʒi. *maſtich. myrrhæ, an.* ʒ ii. *gummi arabic.* ʒ i. *terebinthvenet.* ʒii. *picis naval.* ʒi. ß. *ceræ quantum ſufficit, fiat emplaſt. ſecundum artem:* ſpread it for your uſe upon leather. If the part begin to itch, let the plaſter bee taken awaie, & inſtead thereof uſe *unguent. roſat.* or *refrig. Galen.* or this that followeth. ℞. *olei myrtini. maſtich. cydonior. an.* ʒ i. *hypo. boli armen. ſang. dracon. acatiæ, an.* ʒ i. *ſant. citrini.* ʒß. *ceræ quant. ſuf.* make thereof an ointment according unto art. There are women that bear the childe

Women are in more pain at the untimely birth then at the due time of birth.

The error of the firſt childbirth continues afterwards.

A plaſter ſtaying the infant in the womb.

childe in their womb ten or eleven whole moneths, and ſuch children have their conformation of much quantitie of ſeed: wherefore they will bee more big, great and ſtrong, and therefore they require more time to com to their perfection and maturitie; for thoſe fruits that are great will not bee ſo ſoon ripe as thoſe that are ſmall. But children that are ſmall and little of bodie do often com to their perfection and maturitie in ſeven or nine moneths: if all other things are correſpondent in greatneſs and bigneſs of bodie, it happeneth for the moſt part that the woman with childe is not delivered before the ninth moneth bee don, or at the leaſtwiſe in the ſame moneth. But a male childe will bee commonly born at the beginning, or a little before the beginning of the ſame moneth, by reaſon of his engraffted heat which cauſeth maturitie and ripeneſs. Furthermore, the infant is ſooner com to maturitie and perfection in a hot woman then in a cold, for it is the propertie of heat to ripen.

What children are ten or eleven moneths in the womb.

A male will bee born ſooner then a female.

## CHAP. XXXI.

*How to preſerv the infant in the womb, when the mother is dead.*

IF all the ſigns of death appear in the woman that lieth in travel, and cannot bee delivered, there muſt then bee a Surgeon readie and at hand, which may open her bodie ſo ſoon as ſhee is dead, whereby the infant may bee preſerved in ſafetie; neither can it bee ſuppoſed ſufficient if the mother's mouth and privie parts bee held open; for the infant being encloſed in his mother's womb, and compaſſed with the membranes, cannot take his breath, but by the contractions and dilatations of the arterie of the navel. But when the mother is dead, the lungs do not execute their office and function: therefore they cannot gather in the air that compaſſeth the bodie by the mouth or *aſpera arteria* into their own ſubſtance, or into the arteries that are diſperſed throughout the bodie thereof, by reaſon whereof it cannot ſend it unto the heart by the veinie arterie which is called *arteria venalis*: for if the heart want air, there cannot bee anie in the great arterie which is called *arteria aorta*, whoſe function it is to draw it from the heart; as alſo by reaſon thereof it is wanting in the arteries of the womb, which are as it were the little conduits of the great arterie, whereinto the air that is brought from the heart is derived, and floweth in unto theſe little ones of all the bodie, and likewiſe of the womb. Wherefore it muſt of neceſſitie follow that the air is wanting to the cotyledons of the ſecundines, to the arterie of the infants navel, the iliack arteries alſo, and therefore unto his heart, and ſo unto his bodie: for the air being drawn by the the mother's lungs, is accuſtomed to com to the infant by this continuation of paſſages. Therefore becauſ death maketh all the motions of the mother's bodie to ceaſ, it is far better to open her bodie ſo ſoon as ſhee is dead, beginning the inciſion at the cartelage, *Xiphoides*, or breaſt-blade, and makeing it in a form ſemicircular, cutting the skin, muſcles and *peritonæum*, not touching the guts: then the womb being lifted up, muſt firſt bee cut, leſt that otherwiſe the infant might perchance bee touched or hurt with the knife.

Why it is not ſufficient to preſerv life in the childe to hold open the mouth and privie parts of the mother ſo ſoon as ſhee is dead and the childe alive in her bodie.

How the belly of the woman that dieth in travel muſt bee cut open to ſave the childe.

You ſhall oftentimes finde the child unmoveable, as though hee were dead; but not becauſ hee is dead indeed, but by reaſon that hee, beeing deſtitute of the acceſſe of the ſpirits by the death of the mother, hath contracted a great weakneſs: yet you may know whether hee bee dead indeed or not, by handling the arterie of the navel, for it will beat and pant if hee bee alive, otherwiſe not; but if there bee anie life yet remaining in him, ſhortly after hee hath taken in the air, and is recreated with the acceſs thereof, hee will move all his members, and alſo all his whole bodie. In ſo great a weakneſs or debilitie of the ſtrength of the childe, by cutting the navel ſtring, but it muſt rather bee laid cloſe to the region of the bellie thereof, that thereby the heat (if there bee anie jot remaining) may bee ſtirred up again. But I cannot ſufficiently marvail at the inſolencie of thoſe that affirm that they have ſeen women whoſe bellies and womb have been more then once cut, and the infant taken out, when it could no otherwiſe bee gotten forth, aud yet notwithſtanding alive; which thing there is no man can perſwade mee can bee done, without the death of the mother, by reaſon of the neceſſarie greatneſs of the wound that muſt bee made in the muſcles of the bellie, and ſubſtance of the womb, for the womb of a woman that is great with child, by reaſon that it ſwelleth, and is diſtended with much bloud, muſt needs yield a great flux of bloud, which of neceſſitie muſt bee mortal. And to conclude, when that the wound or inciſion of the womb is cicatrized, it will not permit or ſuffer the womb to bee dilated or extended to receiv or bear a new birth. For theſe and ſuch like other cauſſes, this kinde of cure, as deſperate and dangerous, is not (in mine opinion) to be uſed.

How it may bee known whether the infant bee alive or not.

## CHAP. XXXII.

*Of superfetation.*

What superfetation is.

SUperfetation is when a woman doth bear two or more children at one time in her womb, and they bee encloſed each in his ſeveral ſecundine: but thoſe that are included in the ſame ſecundine, are ſuppoſed to bee conceived at one and the ſame time of copulation, by reaſon of the great and copious abundance of ſeed, and theſe have no number of daies between their conception and birth, but all at once. For as preſently after meat the ſtomach which is naturally of a good temper, is contracted or drawn together about the meat, to comprehend it on everie ſide, though ſmall in quantitie, as it were by both hands, ſo that it cannot rowl neither unto this or that ſide; ſo the womb is drawn together unto the conception about both the ſeeds, aſſoon as they are brought into the capacitie thereof, and is ſo drawn in unto it on everie ſide, that it may com together into one bodie, not permitting anie portion thereof to go into anie other region or ſide, ſo that by one time of copulation the ſeed that is mixed together, cannot engender more children then one, which are divided by their ſecundines.

A woman's womb is not diſtinguiſhed into diverſ cels.

And moreover, becauſ there are no ſuch cells in the wombs of women, as are ſuppoſed, or rather known to bee in the wombs of beaſts, which therefore bring forth manie at one conception or birth. But now if anie part of the woman's womb doth not applie and adjoin it ſelf cloſely to the conception of the ſeed already received, leſt anie thing ſhould bee given by nature for no purpoſe, it muſt of neceſſitie follow that it muſt bee filled with air, which will alter and corrupt the ſeeds. Therefore the generation of more then one infant at a time, haveing everie one his ſeveral ſecundine, is on this wiſe. If a woman conceiv by copulation with a man as this day, and if that for a few daies after the conception, the orifice of the womb bee not exactly ſhut, but rather gape a little, and if ſhee do then uſe copulation again, ſo that at both theſe times of copulation there may bee an effuſion or perfect mixture of the fertile ſeed in the womb, there will follow a new conception, or ſuperfetation. For ſuperfetation is no other then a certain ſecond conception, when the woman already with childe, again uſeth copulation with a man, and ſo conceiveth again, according to the judgment of *Hippocrates*. But there may bee manie cauſſes alledged why the womb which did join and cloſe doth open and unlooſ it ſelf again. For there bee ſom that ſuppoſe the womb to bee open at certain times after the conception, that there may bee an iſſue out for certain excremental matters that are contained therein, and therefore that the woman that hath ſo conceived alreadie, and ſhall then uſe copulation with a man again, ſhall alſo conceiv again.

The reaſon of ſuperfetation.

*Lib. de ſuperfœtationibus.*

Why the womb after the conception of the ſeed, doth many times afterwards open.

Others ſay that the womb of it ſelf, and of its own nature is verie deſirous of ſeed or copulation, or elſ beeing heated or enflamed with the pleaſant motion of the man mooving her thereto, doth at length uncloſe it ſelf to receiv the man's ſeed: for likewiſe it happeneth manie times that the orifice of the ſtomach beeing ſhut after eating, is preſently unlooſed again, when other delicate meats are offered to bee eaten: even ſo may the womb uncloſe it ſelf again at certain ſeaſons, whereof com manifold iſſues, whoſe time of birth and alſo of conception are different. For as *Plinie* writeth, when there hath been a little ſpace between two conceptions, they are both haſtened, as it appeared in *Hercules* and his brother *Ipbicles*; and in her which haveing two children at a birth, brought forth one like unto her husband, and another like unto the adulterer. And alſo in the Procomeſian ſlave or bond-woman, who, by copulation on the ſame day, brought forth one like unto her maſter, and another like unto his ſteward: and in another who brought forth one at the due time of childe-birth, and another at five months end. And again in another, who bringing forth her burthen on the ſeventh month, brought forth two more in the months following. But this is a moſt manifeſt argument of ſuperfetation, that as manie children as are in the womb (unleſs they bee twins of the ſame ſex) ſo manie ſecundines are there, as I have often ſeen my ſelf. And it is verie likely that if they were conceived in the ſame moment of time, that they ſhould all bee included in one ſecundine. But when a woman hath more children then two at one burden, it ſeemeth to bee a monſtrous thing, becauſ that nature hath given her but two breaſts. Although wee ſhall hereafter rehearſ manie examples of more numerous births.

*Lib.7. cap.11.*

## CHAP. XXXIII.

*Of the tumor called* Mola, *or a Mole growing in the womb of Women.*

The reaſon of the name.

OF the Greek word *Myle*, which ſignifieth a Mill-ſtone, this tumor called *Mola* hath its name: for it is like unto a Mill-ſtone both in the round or circular figure, and alſo in hard conſiſtence, for the which ſelf ſame reaſon the whirl-bone of the knee is called of the Latines *Mola*, and of the Greeks *Myle*. But the tumor called *Mola*, whereof wee here entreat, is nothing elſ but a certain falſ conception of deformed fleſh, round and hard, conceived in the womb as it were rude and unperfect,

What a *Mola* is.

and

not distinguished into members, comming by corrupt, weak, and diseased seed, and of the immoderate flux of the termes, as it is defined by *Hippocrates*. This is incloſed in no ſecundine, but as it were in its own skin. *Lib.de ſteril.*

There are ſom that think the *Mola* to bee ingendered of the concourſ or mixture of the womans ſeed and menſtrual blood, without the communication of the mans ſeed. But the opinion of *Galen* is, that never anie man ſaw a woman conceiv either a *Mola*, or anie other ſuch thing, without copulation of man, as a hen laieth eggs without a cock: for the onely cauſ and original of that motion is in the mans ſeed, and the mans ſeed doth onely miniſter matter for the generation thereof. Of the ſame opinion is *Avicen*, who thinketh the *Mola* to bee made by the confluxion of the mans ſeed that is unfertile, with the womans; when as it, becauſ unfruitful, onely puff's up or make's the womans ſeed to ſwell as leaven into a greater bigneſs, but not into anie perfect ſhape or form. Which is alſo of the opinion of *Fernelius*, by the decrees of *Hippocrates* and *Avicen*: for the immoderate fluxes of the courſes are conducing to the generation of the *Mola*, which overwhelming the mans ſeed, beeing now unfruitful and weak, doth conſtrain it to deſiſt from its interpriſe of conformation alreadie begun, as vanquiſhed or wholly overcom: for the generation of the *Mola* commeth not of a ſimple heat working upon a clammie and groſs humor, as worms are generated; but of both the ſeeds, by the efficacie of a certain ſpirit, after a ſort prolifical, as may bee underſtood by the membranes wherein the *Mola* is incloſed, by the ligaments whereby manie times it is faſtened or bound to the true conception or childe, engendered or begotten by ſuperfœtation; and finally, by the increaſ, and great and ſluggiſh weight. If all men were not perſwaded that the conflux of a mans ſeed muſt of neceſſitie concur to the generation of the *Mola*, it would bee no ſmall cloak or cover to women to avoid the ſhame and reproach of their light behavior. *Cap. 7. lib. 4. de uſu part.*

How the *mola* is engendered.

## CHAP. XXXIV.

*How to diſcern a true conception from a falſ conception or* Mola.

The ſignes of a *mola* incloſed in the womb.

When the *Mola* is incloſed in the womb, the ſame things appear as in the true and lawful conception. But the more proper ſignes of the *Mola* are theſe: there is a certain pricking pain, which at the beginning troubleth the bellie as if it were the cholick, the belly will ſwel ſooner then it would if it were the true iſſue, and will bee diſtended with greater hardneſs, and is more difficult and troubleſom to carrie, becauſ it is contrarie to nature, and void of ſoul or life. Preſently after the conception the dugs ſwel and puff up, but ſhortly they fall and becom lank and lax; for nature ſendeth milk thither in vain, becauſ there is no iſſue in the womb that may ſpend the ſame. The *Mola* will move before the third month, although it bee obſcurely, but the true conception will not: but this motion of the *Mola* is not of the intellectual ſoul, but of the facultie of the womb, and of tht ſpirit of the ſeed diſperſed through the ſubſtance of the *Mola*; for it is nouriſhed and increaſeth after the manner of plants, but not by reaſon of a ſoul or ſpirit ſent from above, as the infant doth. Moreover, that motion that the infant hath in its due and appointed time, differeth much from the motion of the *Mola*; for the childe is mooved to the right ſide, to the left ſide, and to everie ſide gently, but the *Mola*, by reaſon of its heavineſs, is fixed, and rowleth in manner of a ſtone, carried by the weight thereof unto what ſide ſoever the woman declineth her ſelf. The woman that hath a *Mola* in her womb doth dalie wax leaner and leaner in all her members, but eſpecially in her leggs, although notwithſtanding towards night they will ſwel, ſo that ſhee will bee verie ſlow or heavie in going, the natural heat forſakeing the parts remote from the heart by little and little: and moreover, her bellie ſwel's, by reaſon that the menſtrual matter reſteth about thoſe places, and is not conſumed in the nouriſhment of the *Mola*; ſhee is ſwoln as if ſhee had the dropſie, but that it is harder, and doth not riſe again when it is preſſed with the fingers. The navel doth not ſtand out as it will do when the true iſſue is conteined in the womb, neither do the courſes flow as they ſomtimes do in the true conception; but ſomtimes great fluxes happen, which eaſ the weight of the bellie. In manie when the *Mola* doth cleav not verie faſt, it falleth awaie within three or four moneths, beeing not as yet com unto its juſt bigneſs; and manie times it cleaveth to the ſides of the womb & Cotylidons verie firmly, ſo that ſom women carrie it in their wombs five or ſix yeers, and ſom as long as they live.

By what facultie the womb moovcth.

How the motion of the *mola* differeth from the motion of the infant in the womb.

The *mola* doth turn to each ſide of the womb, as the ſituation of the bodie is.

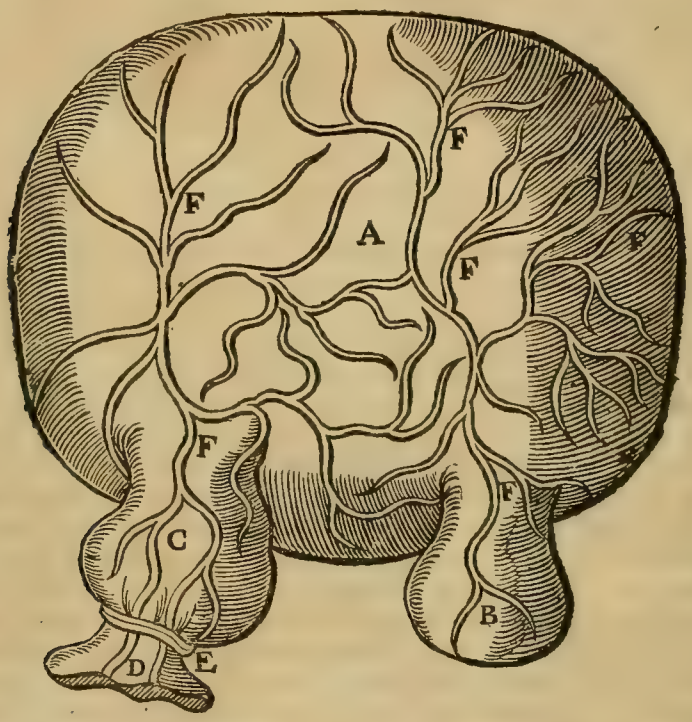
The wife of *Guiliam Roger* Pewterer, dwelling in St. *Victors* ſtreet, bore a *Mola* in her womb ſeventeen yeers, who beeing of the age of fiftie yeers, died; and I haveing opened her found the bodie of her womb to bee almoſt looſed, and not tied or bound by its accuſtomed ligatures, but as it were hanging onely by the neck, and furthermore cleaving to the Kall adjoining to it, haveing but onely one teſticle, and that on the right ſide, and that ſomwhat broader and looſer then uſual: the hornes were not to bee ſeen except it were on that ſide, the veſſels were on the neck onely, and there verie manifeſt and puffed up, it was as big as a mans head. When I had taken it out of her bodie, I brought it home unto my houſ, that at my

A hiſtorie.

The deſcripti-on of a *Mola* carried ſeven-teen yeers in the womb.

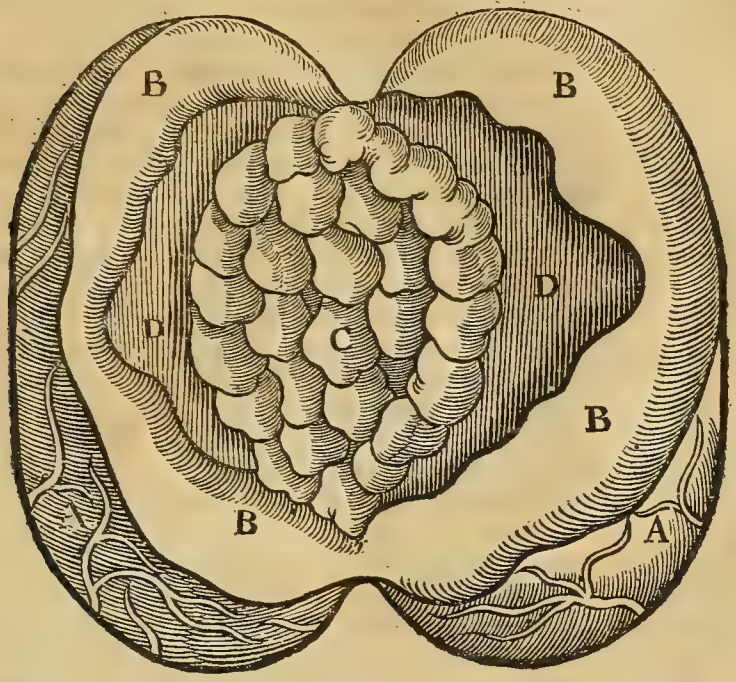
my leaſure I might finde out what was conteined in it ſo long; therefore, on a certain day, calling together the chief Phyſicians of Paris, as *Maſſilæus, Alexis, Vigor, de S. Pont. Feure, Brovet, Violais, Grealmus, Ravin, Mareſcotius, Milotus, Hautin, Riolan, Luſſon*; and Surgeons, as *Brun, Cointerel, Guillemeau*; all theſe beeing preſent, I opened the womb, and I found it in all the bodie thereof, and in the proper tunicle, ſo ſchirrhous, and ſo hard, that I could hardly cut or make a knife to enter it: the bodie thereof was three fingers thick. In the midſt of the capacitie thereof I found a lump of fleſh as big as both my fiſts, like unto a Cow's udder, cleaving to the ſides of the womb but in certain placee, of a verie thick, unequal and cloddiſh ſubſtance, with manie bodies therein, even as are commonly found in wens and griſtles, diſperſed through it as if it were bones. The judgment of all that were preſent was, that this great tumor at the firſt was a *Mola*, which in proceſs of time degenerated into a ſchirrous bodie, together with the proper ſubſtance of the womb. Moreover, in the middle of the neck of the womb, wee found a tumor as big as a Turkie's egg, of ſubſtance hard, cartilaginous and bonie, filling all the whole neck, but eſpecially the inward orifice of the womb, which the common people of France do call the *Garland*, ſo that by that paſſage nothing could go out, or enter into the womb: all that tumor weighed nine pounds and two ounces, which I, by reaſon of the noveltie of the thing, keep in my cloſer, and here I have deſcribed it.

*The external form and deſcription of the fore-named womb.*




**A.** *Sheweth the bodie of the womb.*
**B.** *The teſticle.*
**C.** *The neck of the womb, wherein that little tumor was contained.*
**D.** *Sheweth the end of the neek of the womb that was plucked in ſunder, and alſo the veſſels whereby it drew the nutriment unto it.*
**E.** *Sheweth the band.*
**FFF.** *The veſſels diſperſed thorow the womb.*

*The deſcription of the womb beeing open, and ſhewing the* Mola *contained therein.*




A.A. *Shew the external and ſuperficial part of the womb.* B.B.B.B. *Shew the thickneſs of the bodie, or proper ſubſtance of the womb.* C. *Sheweth the* Mola. D.D. *Shew that concavitie wherein the* Mola *was contained, or incloſed in the womb.*

As long as the woman carried this *Mola* in her womb, ſhee felt moſt ſharp pain in her bellie, the region of her bellie was marvellous hard, diſtended and large, as if it were a woman that had manie children at once in her womb; ſo that manie Phyſicians, when the time of childe-birth was paſt, ſuppoſed that ſwelling of the bellie to com of the dropſie, and aſſaied to cure it as they would the dropſie; but for all the medicines they could uſe, the bellie became never the leſſer. Oftentimes the urine was ſtopped for the ſpace of three daies, and then the makeing of urine was verie painfull unto her, and manie times alſo her excrements were ſtopped for the ſpace of a week, by reaſon that the guts were preſſed by the weight of the *Mola*. At certain ſeaſons, as everie third moneth, there came exceeding great fluxes, the matter thereof could not bee carried through the capacitie of the womb, as wee ſaid before, becauſ it was exactly ſhut and ſtopped, but through the veſſels by which virgins, and alſo certain other women great with childe evacuate their menſtrual matter. If the *Mola* bee expelled or caſt out in the firſt or ſecond moneth, as manie times it ſo happeneth, it is called of women an unprofitable or falſe conception. Somtimes there are found in one womb two or three moles ſeparated one from another, and ſomtimes bound or tied to the ſound and perfect infant. As it happened in the wife of *Valleriola* the Phyſician, which was delivered of a *Mola* which ſhee had carried in her womb twelve moneths, annexed with a childe of four moneths old, which had deprived the infant both of its room and nutriment. For it is alwaies to bee certainly ſuppoſed, that the *Mola*, as a cruel beaſt, by its ſocietie, and keeping it from its nutriment and place, kil's the infant that is joined unto it.

A vain or unprofitable conception.

The *Mola* kill's the infant in the womb, when it is faſtened unto it.

I remember once I opened the bodie of a dead woman, which had a *Mola* in her womb, as big as a Gooſ-egg, which when nature had aſſaied by manie vain endevors to caſt out, remained notwithſtanding, and at length putrefied, and therewith infected the whole womb, whereof ſhee died. There bee ſom which judging themſelvs great with childe, doe about the ninth or tenth moneth expell no other thing but ſounding blaſts of winde; whereby the womb ſuddenly falling down, and waxing more ſlender, they are ſaid in a mockerie to have been delivered of a fart. To conclude, whatſoever reſemble's beeing with childe, if it bee not excluded at the due and lawful time of childe-birth by its own accord, or by the ſtrength of nature, then muſt it bee expelled by art.

## CHAP. XXXV.

*What cure muſt bee uſed to the* Mola.

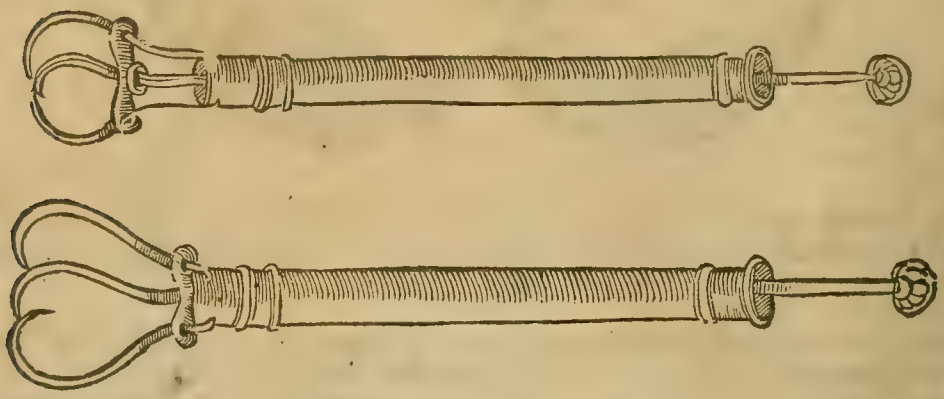
ALl things that provoke the flowers and ſecundines, and exclude the infant, beeing dead, are to bee preſcribed, given inwardly, put up, and applied outwardly, as the trochiſces of

of *myrrha*, hermodactyls, and ſuch like, firſt haveing fomentations that are relaxing and mollifying alwaies applied to the places. You muſt uſe theſe medicines and phlebotomie, diet and baths then and ſo long as it ſhall ſeem neceſſarie to the Phyſician that is preſent. But if it happen's that the *mola* is ſeparated or looſed from the womb, and nature cannot expel it when it is ſo looſed, let the Chirurgian place the woman in that ſituation that wee ſaid ſhee was to bee put in, when the childe was to bee drawn from her. Then opening her genital parts, let him take hold on it by putting an inſtrument into it, which by reaſon of the likeneſs thereof is called a Gryphon's Talon, for it cannot bee taken hold on otherwiſe, by reaſon of the roundneſs thereof, for it hath no place whereon it bee may taken hold of: therefore when one taketh hold on it with his hand, it cannot bee holden faſt by reaſon of the ſlipperineſs thereof, but will run aud ſlip back into the hollowneſs of the womb, like unto a bowl or great ball; but it may bee more eaſily taken hold on with the Gryphon's Talon, if the bellie bee preſſed on both ſides that it may remain ſtill while the Gryphon's Talon take's hold on it, for when it hath taken good hold on it, it may bee eaſily drawn out. When the *mola* is drawn out, the ſame cure muſt bee uſed to the woman, as is uſed to a woman after that ſhee is delivered of childe.

Thoſe things that provoke the flowrs forcibly, do alſo conſume or waſte the *mola*.

The Chirurgical extraction of the *mola*.

*The figure of an an inſtrument called a Gryphon's Talon, to draw out the* Mola *when it is looſ in the womb.*



## CHAP. XXXVI.

*Of Tumors or ſwellings happening to the* Pancreas *or ſweet-bread, and the whole Meſenterie.*

THe tumors of other places and parts in the bellie ought diligently to bee diſtinguiſhed from the *mola*, and other tumors of the womb. For when the tumors ariſe in the *glandula* called *Pancreas*, and in all the whole *Meſenterium*, manie unskilful Chirurgians take them for *mola's* or ſcirrhous tumors of the womb, and ſo go erroneouſly about to cure them, as ſhall appear by theſe hiſtories following.

An hiſtorie.

*Iſabel Rolant* the wife of *John Bony* dwelling in Paris in the ſtreet *Moncey* near to St. *Geruiſe* his Church, beeing threeſcore years of age, departed this life in the year of our Lord 1578. on the twentie ſecond daie of October: and her bodie beeing opened in the preſence of Doctor *Milot* the Phyſician, hee, when the Meſenterie was taken out of the bodie, cauſſed it to bee carried home to his houſ, that at his leaſure hee might finde out the cauſ of this mortal diſeaſ, which was alwaies ſuſpected to bee in the Meſenterie. Therefore on a time calling *Varadeus*, *Brove*, *Chappel*, *Mareſcotius*, *Arragonius*, *Baillutius*, *Reburtius*, and *Riolan*, all Doctors of Phyſick, and mee and *Pineus* Chirurgians, to his houſ to ſee the ſame. Where wee found all the Meſenterie and the *Pancreas* in the Meſenterie ſwoln and puffed up with a marvellous and almoſt incredible tumor, ſo that it weighed ten pound and a half, altogether ſcirrhous on the outſide, cleaving on the hinder part onely to the *vertebres* of the loins: but on the fore-part to the *Pæritonæum*, being alſo ſcirrhous and wholly cartilaginous. Moreover, there were infinite other abſceſſes in the ſame Meſenterie, everie one cloſed in his ſeveral ciſt, ſom filled with a honie-like, ſom filled with a tallow-like, ſom with an albugineous, and ſom with a wateriſh liquor or humor, whereof ſom alſo were like unto pap; and to conclude, look how manie abſceſſes there were, ſo manie kindes or differences of matters there were. It was then eight years ſince that tumor began to grow by little and little wihout feeling and pain unto ſuch a greatneſs, becauſ that the Meſenterie it ſelf was without pain in a manner. For the woman her ſelf could do all the faculties of nature almoſt as well as if ſhee had been ſound and whole, except that two months before ſhee died, ſhee was conſtrained to keep her bed, becauſ ſhee had a continual fever, which endured ſo long as ſhee lived, and alſo becauſ that the Meſenterie, beeing as it were ſeparated or torn from its roots or ſeat, did rowl up and down in the bellie, not without the feeling of grievous pain: for, as wee ſaid before, it did ſtick but onely to the *vertebres* of the

Aposſtumes of diverſ kindes in the *Meſenterium*.

The accidents that com when the *Meſenterium* is ſeparated from the bodies adjoining.

the

the loins and *Peritonæum*, and nothing at all to the guts and other parts whereunto it is as it were naturally knit or joined.

Therefore becauſe the weight and heavineſs thereof depreſſed the bladder, it cauſſed a great difficultie in her making of water, and alſo becauſe it reſted on the guts, it made it verie painful for her to go to ſtool, ſo that the excrements would not com down except ſhee took a ſharp glyſter to cauſe them: and as concerning glyſters, they could not bee put up high enough by reaſon of the greatneſs of the tumor which encloſed and ſhut the way; and ſuppoſitories did no good at all. It was alſo verie difficult for her to take breath, by reaſon that the midriff or *diaphragma* was compreſſed with the tumor. There were ſom that did ſuſpect it to bee a *mola*, others thought that it came by reaſon of the dropſie. Aſſuredly this diſeaſe cauſſed the dropſie to enſue; neither was the cauſe thereof obſcure, for the function of the Liver was fruſtrated by reaſon that the concoction or the alteration of the Chylus was intercepted by occaſion of the tumor: and moreover, the Liver it ſelf had a proper diſeaſe, for it was hard and ſcirrhous, and had manie abſceſſes both within and without it, and all over it. The milt was ſcarce free from putrefaction, the guts and Kall were ſomwhat blew and ſpotted, and to bee brief, there was nothing found in the lower bellie.

The dropſie comming of a tumor of the *Meſenterium*.

There is the like hiſtorie to bee read, written by *Philip Ingraſſias*, of a certain Moor that was hanged for theft, for (ſaith hee) when his bodie was publickly diſſected, in the *Meſenterium* were found ſeventie ſcrophulous tumors, and ſo manie abſceſſes were contained or encloſed in their ſeveral ciſts or skins, and ſticking to the external tunicle, eſpecially of the greater guts: the matter contained in them was divers, for it was hard, knottie, clammie, glutinous, liquid and wateriſh,; but the entrails, eſpecially the Liver and the milt, were found free from all manner of tainture, becauſe (as the ſame Author alledgeth) nature being ſtrong, had ſent all the evil juice, and the corruption of the entrals into the Meſenterie: and verily this Moor, ſo long as he lived, was in good & perfect health. Without doubt the corruption of ſuperfluous humors for the moſt part is ſo great (as is noted by *Fernelius*) that it cannot bee received in the receptacles that nature hath appointed for it; therefore then no ſmall portion thereof falleth into the parts adjoining, and eſpecially into the Meſenterie and *Pancreas*, which are as it were the ſink of the whole bodie. In thoſe bodies which through continual and dailie gluttonie abound with choler, melancholie and phlegm, if it bee not purged in time, nature beeing ſtrong and luſtie, doth depel and drive it down into the *pancreas* and the Meſenterie, which are as places of no great repute, and that eſpecially out of the Liver and Milt by thoſe veins or branches of the *vena porta* which end or go not into the guts, but are terminated in the Meſenterie and *Pancreas*. In theſe places diverſ humors are heaped together, which in proceſs of time turn into a looſ and ſoft tumor, and then if they grow bigger, into a ſtiff, hard and verie ſcirrhous tumor. Whereof *Fernelius* affirmeth that in thoſe places hee hath found the cauſſes of choler, melancholie, fluxes, dyſenteries, cachexia's, atrophia's, conſumptions, tedious and uncerttain fevers, and laſtly of manie hidden diſeaſes, by the takeing whereof ſom have received their health, that have been thought paſt cure. Moreover *Ingraſſias* affirmeth out of *Julius Pollux* that Scrophulae's may bee engendred in the Meſenterie, which nothing differ's from the minde and opinion of *Galen*, who ſaith that Scrophulae's are nothing elſ but indurate and ſcirrhous kernels. But the *Meſenterium* with his glandules beeing great and manie, makeing the *Pancreas*, doth eſtabliſh, ſtrengthen and confirm the diviſions of the veſſels. Alſo the *ſcirrhus* of the proper ſubſtance of the womb is to bee diſtinguiſhed from the *mola*: for in the bodies of ſom women that I have opened, I have found the womb annoied with a ſcirrhous tumor as big as a man's head, in the cureing whereof Phyſicians nothing prevailed, becauſe they ſuppoſed it to bee a *mola* contained in the capacitie of the womb, and not a ſcirrhous tumor in the bodie thereof.

*Tom.1.tra.1. cap.1.*

*Lib.6.part.mor. cap.7.*

The *Meſenterium* is the ſink of the bodie.

The Scrophulae's in the *Meſenterium*.

A *ſcirrhus* of the womb.

## CHAP. XXXVII.

### *Of the cauſe of barrenneſs in men.*

THere are manie cauſſes of barrenneſs in men, that is to ſay, the too hot, cold, drie or moiſt diſtemper of the ſeed, the more liquid and flexible conſiſtence thereof, ſo that it cannot ſtay in the womb, but will preſently flow out again: for ſuch is the ſeed of old men and ſtriplings, and of ſuch as uſe the act of generation too often and immoderately: for thereby the ſeed becommeth crude and wateriſh, becauſe it doth not remain his due and lawful time in the teſticles, wherein it ſhould bee perfectly wrought and concocted, but is evacuated by wanton copulation. Furthermore, that the ſeed may bee fertile, it muſt of neceſſitie bee copious in quantitie, but in qualitie well concocted, moderately thick, clammie, & puffed with abundance of ſpirits; both theſe conditions are wanting in the ſeed of them that uſe copulation too often: and moreover, becauſe the wives of thoſe men never gather a juſt quantitie of ſeed laudable both in qualitie and conſiſtence in their teſticles, whereby it commeth to paſs that they are the leſs provoked or delighted with venereous actions, and perform the act with

How the ſeed is unfertil.

with leſs alacritie, ſo that they yeeld themſelvs leſs prone to conception. Therefore let thoſe that would bee parents of manie children uſe a mediocritie in the uſe of venerie.

How the cutting of the veins behinde the ears maketh men barren.

The woman may perceiv that the man's ſeed hath ſom diſtemperature in it, if when ſhee hath received it into her womb, ſhee feeleth it ſharp, hot or cold, if the man bee more quick or ſlow in the act. Manie becom barren after they have been cut for the ſtone, and likewiſe when they have had a wound behinde the ears, whereby certain branches of the jugular veins and arteries have been cut, that are there, ſo that after thoſe veſſels have been cicatrized, there followed an interception of the ſeminal matter downwards, and alſo of the communitie which ought of neceſſitie to bee between the brain and the teſticls, ſo that when the conduits or paſſages are ſtopped, the ſtones or teſticles cannot anie more receiv, neither matter nor lively ſpirits from the brain in ſo great quantitie as it was wont, whereof it muſt of neceſſitie follow, that the ſeed muſt bee leſſer in quantitie, and weaker in qualitie.

Thoſe that have their teſticles cut off, or elſ compreſſed or contuſed by violence, cannot beget children, becauſ that either they want that help the teſticles ſhould miniſter in the act of generation, or elſ becauſ the paſſage of the ſeminal matter is intercepted or ſtopped with a Callus: by reaſon whereof they cannot yeeld forth ſeed, but a certain clammie humor contained in the glandules called *proſtatæ* (yet with ſom feeling of delight).

The defaults of the yard.

Moreover the defects or imperfections of the yard may cauſ barrenneſs: as, if it bee too ſhort, or if it bee ſo unreaſonable great, that it renteth the privie parts of the woman, and ſo cauſeth a flux of blood, for then it is ſo painful to the woman, that ſhee cannot void her ſeed, for that cannot bee excluded without pleaſure and delight, alſo if the ſhortneſs of the ligature ligament that is under the yard doth make it to bee crooked, and violate the ſtiff ſtraightneſs thereof, ſo that it cannot bee put directly or ſtraightly into the woman's privie parts. There bee ſom that have not the orifice of the conduit of the yard rightly in the end thereof, but a little higher, ſo that they cannot ejaculate or caſt out their ſeed into the womb.

The ſign of the palſie in the yard.

Alſo the particular palſie of the yard is numbred among the cauſſes of barrenneſs; and you may proov whether the palſie bee in the yard by dipping the genitals in cold water: for except they do draw themſelvs together or ſhrink up after it, it is a token of the palſie; for members that have the palſie, by the touching of cold water, do not ſhrink up, bnt remain in their accuſtomed laxitie and looſneſs: but in this caſe the genitals are endued with ſmall ſenſ; the ſeed commeth out without pleaſure or ſtiffneſs of the yard; the ſtones in touching are cold; and to conclnde, thoſe that have their bodies daily waxing lean through a conſumption, or that are vexed with an evil habit or diſpoſition, or with the obſtruction of ſom of the entrals, are barren and unfertil, and likewiſe thoſe in whom ſom noble part neceſſarie to life and generation exceedeth the bounds of nature with ſom great diſtemperature, and laſtly thoſe who by anie means have their genital parts deformed.

Magick bands and enchanted knots.

Here I omit thoſe that are withholden from the act of generation by inchantment, magick, witching and inchanted knots, bands and ligatures, for thoſe cauſſes belong not to Phyſick, neither may they bee taken away by the remedies of our Art. The Doctors of the Canon laws have made mention of thoſe magick bands which may have power in them, in the particular title *De frigidis, maleficiatis, impotentibus & incantatis*; alſo *St. Auguſt.* hath made mention of them, *Tract. 7. in Joan.*

## CHAP. XXXVIII.

*Of the barrenneſs or unfruitfulneſs of Women.*

The cauſ why the neck of the womb is narrow.

A Woman may becom barren or unfruitful through the obſtruction of the paſſage of the ſeed, or through ſtraitneſs and narrowneſs of the neck of the womb comming either through the default of the formative faculties, or elſ afterwards by ſom miſchance, as by an abſceſs, *ſcirrhus*, warts, chaps, or by an ulcer, which being cicatrized, doth make the way more narrow, ſo that the yard cannot have free paſſage thereinto: Moreover, the membrane calle *Hymen*, when it groweth in the mid'ſt or in the bottom of the neck of the womb, hinder's the receiving of the man's ſeed. Alſo if the womb bee over-ſlipperie, or more looſ, or over wide, it maketh the woman to bee barren; ſo doth the ſuppreſſion of the menſtrual fluxes, or the too immoderate flowing of the courſes or whites: which commeth by the default of the womb, or ſom entral, or of the whole bodie, which conſumeth the menſtrual matter, & carrieth the ſeed away with it.

The membrane called *Hymen*.

The cauſ of the flux of women.

The cold and moiſt diſtemperature of the womb, extinguiſhe's and ſuffocate's the man's ſeed, and maketh it that it will not ſtay or cleav unto the womb, and ſtay till it bee concocted: but the more hot and drie doth corrupt for want of nouriſhment, for the ſeeds that are ſown either in a mariſh or ſandie ground cannot proſper well: alſo a *mola* contained in the womb, the falling down of the womb, the leanneſs of the woman's bodie, ill humors bred by eating crude and raw fruits, or great, or overmuch, whereof obſtructions and crudities follow which hinder her fruitfulneſs. Furthermore, by the uſe of ſtupefactive things, the ſeminal matter is congealed and reſtrained, and though it flow and bee caſt out, yet it is deprived

prived of the prolifick power, and of the lively heat and ſpirits, the orifices or cotylidones of the veins and arteries are ſtopped, and ſo the paſſage for the menſtrual matter into the womb, is ſtopped. When the Kall is ſo far that it girdeth in the womb narrowly, it hindereth the fruitfulneſs of the woman, becauſ it will not permit the mans ſeed to enter into the womb. Moreover the fat and fleſhie habit of the man or woman hinder generation. For it hindereth them that they cannot join their genital parts together: and by how much the more blood goeth into fat, by ſo much the leſs is remaining to bee turned into ſeed & menſtrual blood, which two are the originals and principals of generation. Thoſe women that are ſpeckled in the face, ſomwhat lean, and pale, becauſ they have their genitals moiſtned with a ſaltiſh, ſharp and tickling humor, are more given to venerie then thoſe that are red and fat. Finally, *Hippocrates* ſet's down four cauſes onely why women are barren and unfruitful. The firſt is, becauſ they cannot receiv the mans ſeed, by reaſon of the fault of the neck of the womb; the ſecond, becauſ when it is received into the womb, they cannot conceiv it; the third is, becauſ they cannot nouriſh it; the fourth, becauſ they are not able to carrie or bear it untill the due and lawful time of birth. Theſe things are neceſſarie to generation, the object, will, facultie, concourſ of the ſeeds, and the remaining or abiding thereof in the womb, untill the due and appointed natural time.

*Aph 36. ſect. 5. Gal. lib. 14. de uſu par cap. 9. Ariſt. in prob. ſect deſter. qua. 3. & 4.*

## CHAP. XXXIX.

### *The ſignes of a diſtempered womb.*

THat woman is thought to have her womb too hot, whoſe courſes com forth ſparingly and with pain, and exulcerate by reaſon of their heat, the ſuperfluous matter of the blood beeing diſſolved or turned into winde by the power of the heat: whereupon that menſtrual blood that floweth forth is more groſs and black. For it is the propertie of heat, by digeſting the thinner ſubſtance, to thicken the reſt, and by aduſtion to make it more black. Furthermore, ſhee that hath her genitals itching with the deſire of copulation, will ſoon exclude the ſeed in copulation, and ſhee ſhall feel it more ſharp as it goeth throngh the paſſages. That woman hath too cold a womb whoſe flowers are either ſtopped, or flow ſparingly, and thoſe pale and not well colored.

*The ſignes of a hot womb.*

*The ſignes of a cold womb.*

Thoſe that have leſs deſire of copulation, have leſs delight therein, and their ſeed is more liquid and wateriſh, and not ſtaining a linnen cloth by ſticking thereunto, and it is ſparingly and ſlowly caſt forth. That womb is too moiſt that floweth continually with manie liquid excrements, which therefore will not hold the ſeed, but preſently after copulation ſuffereth it to fall out; which will eaſily cauſ abortion. The ſignes of too drie a womb appear in the little quantitie of the courſes, in the profuſion of a ſmall quantitie of ſeed, by the deſire of copulation, whereby it may bee made ſlipperie by the moiſture of the ſeed, by the fiſſures in the neck thereof, by the chaps and itching, for all things for want of moiſture will ſoon chap, even like unto the ground, which in the ſummer by reaſon of great drought or drineſs, will chap and chink this waie and that waie, and on the contrarie with moiſture it will cloſe and join together again as it were with glew.

*The ſignes of a moiſt womb.*

*The ſignes of drie womb.*

A woman is thought to have all opportunities unto conception when her courſes or flowers do ceaſ, for then the womb is void of excremental filth, and becauſ it is yet open, it will the more eaſily receiv the mans ſeed, and when it hath received it, it will better retain it in the wrinkles of the cotylidones yet gaping as it were in rough and unequal places. Yet a woman will eaſily conceav a little before the time that the flowers ought to flow: becauſ that the menſtrual matter falling at firſt like dew into the womb, is verie meet and fit to nouriſh the ſeed, and not to drive it out again, or to ſuffocate it.

*A meet time for conception.*

Thoſe which uſe copulation when their courſes fall down aboundantly, will verie hardly or ſeldom conceiv, and if they do conceiv, the childe vvill bee vveak and diſeaſed, and eſpecially if the vvomans blood that flovv's out bee unſound; but if the blood bee good and laudable, the childe vvill bee ſubject to all plethorick diſeaſes. There are ſom vvomen in vvhom preſently after the flux of the termes, the orifice of the vvomb vvill bee cloſed, ſo that they muſt of neceſſitie uſe copulation vvith a man vvhen their menſtrual flux flovveth, if at leaſt they vvould conceiv at all. A vvoman may bear children from the age of fourteen untill fortie or fiftie; vvhich time vvhoſoever doth exceed, vvill bear untill threeſcore yeers, becauſ the menſtrual fluxes are kept, the prolifical facultie is alſo preſerved: therefore manie vvomen have brought forth children at that age, but after that time no vvoman can bear, as *Ariſtotle* vvriteth.

*Ariſt. l. 7. de hiſt. anim. c. 2. & c. 5*

Yet *Plinie* ſaith that *Cornelia* (who was of the houſ of the *Scipios*) beeing in the ſixtie ſecond yeer of her age, bear *Voluſius Saturnius*, who was Conſul; *Valeſcus de Tarenta* alſo affirmeth, that hee ſaw a woman that bear a childe on the ſixtie ſecond yeer of her age, having born before on the ſixtieth and ſixtie firſt yeer. Therefore it is to bee ſuppoſed that by reaſon of the varietie of the air, region, diet and temperament, the menſtrual flux and procreative facultie ſeaſeth in ſom ſooner, in ſom later; which varietie taketh place alſo in men.

*Lib. 7. ca. 14. Lib. 6. cap. 12.*

For

*Lib. 7. de hiſt. e-nim. c. 1. & 4. 6.* For in them although the ſeed be genitable for the moſt part in the ſecond ſeventh yeer, yet truly it is unfruitful untill the third ſeventh yeer. And whereas moſt men beget children untill they bee threeſcore yeers old, which time if they paſs, they beget till ſeventie: yet there are ſom known that have begot children untill the eightieth yeer. Moreover, *Plinie* writeth that *Maſiniſſa* the King begot a ſon when hee was fourſcore and ſix yeers of age, and *Lib. 7. cap. 14.* alſo *Cato* the Cenſor after that hee was fourſcore.

## CHAP. XL.

*Of the falling down, or perverſion, or turning of the womb.*

What is the falling down of the womb.

THe womb is ſaid to fall down and bee perverted, when it is mooved out of its proper and natural place; as when the bands and ligatures thereof beeing looſed and relaxed, it falleth down unto one ſide or other, or into its own neck, or elſ paſſeth further, ſo that it com's out at the neck, and a great portion thereof appear's without the privie parts. Therefore what things ſoever reſolv, relax, or burſt the ligaments or bands whereby the womb is tied, are ſuppoſed to bee the cauſſes of this accident. It ſomtimes happen's by vehement labor or travail in childe-birth, when the womb with violence excluding the iſſue and the ſecundines, alſo follow's and fall's down, turning the inner-ſide thereof outward. And ſomtimes the fooliſh raſhneſs of the Midwife, when ſhee draweth away the womb with the infant, or with the ſecundine cleaving faſt thereunto, and ſo drawing it down and turning the inner-ſide outward. Furthermore, a heavie bearing of the womb, the bearing or the carriage of a great burthen, holding or ſtretching of the hands or bodie upwards in the time of greatneſs with childe, a fall, contuſion, ſhakeing, or jogging by rideing, either in a Waggon or Coach; or on horſ-back, or leaping or dancing, the falling down of a more large and abundant humor, great gripeing, a ſtrong and continual cough, a *Teneſmus*, or often deſire to go to ſtool, yet not voiding anie thing, neeſing, a manifold and great birth, difficult bearing of the womb, an aſtmatical and orthopnoical difficultie of breathing, whatſoever doth weightilie preſs down the *Diaphragma* or Midriff, or the muſcles of the *Epigaſtrium*, the takeing of cold air in the time of travail with childe, or in the flowing of the menſtrual flux, ſitting on a cold marble-ſtone, or anie other ſuch like cold thing, are thought often times to bee the occaſion of theſe accidents, becauſ they may bring the womb out of its place.

The cauſſes.

*Ariſt. lib. 7. de hiſtor. anim. cap. 2.* It fall's down in manie (ſaith *Ariſtotle*) by reaſon of the deſire of copulation that they have, either by reaſon of the luſtineſs of their youth, or elſ becauſ they have abſtained a long time from it.

The ſignes.

You may know that the womb is fallen down by the pain of thoſe parts wherehence it is fallen, that is to ſay by the entrals, loines, *os ſacrum*, and by a tractable tumor at the neck of the womb, and often with a viſible hanging out, of a diverſ greatneſs, according to the quantitie that is fallen down. It is ſeen ſomtimes like unto a piece of red fleſh, hanging out at the neck of the womb, of the bigneſs and form of a Gooſ-egg; if the woman ſtand upright, ſhee feeleth the weight to lie on her privie parts, but if ſhee ſit or lie, then ſhee perceiveth it on her back, or go to the ſtool, the ſtraight gut called *inteſtinum rectum* will bee preſſed or loaden as if it were with a burthen, if ſhee lie on her bellie, then her urine will bee ſtopped, ſo that ſhee ſhall fear to uſe copulation with a man.

The prognoſtications.

When the womb is newly relaxed in a young woman, it may bee ſoon cured, but if it hath been long down in an old woman, it is not to bee helped. If the palſie of the ligaments thereof have occaſioned the falling, it ſcarce admit's of cure, but if it fall's dovvn by means of putrefaction, it cannot poſſibly bee cured. If a great quantitie thereof hang out betvveen the thighes, it can hardly bee cured; but it is corrupted by takeing the air, and by the falling dovvn of the urine and filth, and by the motions of the thighes in going it is ulcerated, and ſo putrefie's.

A hiſtorie.

I remember that once I cured a young vvoman vvho had her vvomb hanging out at her privie parts as big as an egg, and I did ſo vvell perform and perfect the cure thereof, that aftervvards ſhee conceived, and bare children manie times, and her vvomb never fell dovvn.

## CHAP. XLI.

*The cure of the falling down of the womb.*

Remedies for the aſſcenſion of the womb.

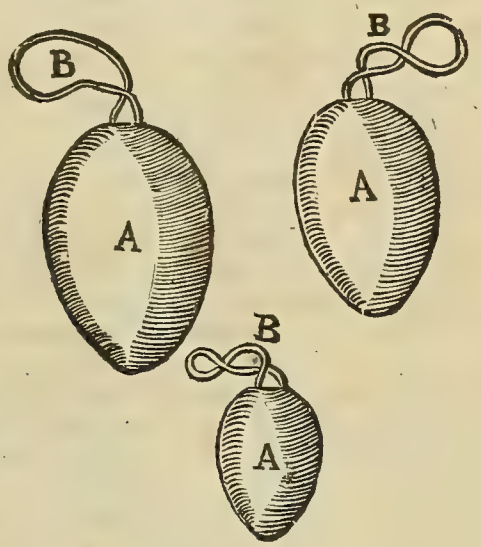
BY this vvord, falling dovvn of the vvomb, vvee underſtand everie motion of the vvomb out of its place or ſeat: therefore if the womb aſcend upwards, vvee muſt uſe the ſame medicines as in ſtrangulation of the womb. If it bee turned towards either ſide, it muſt bee reſtored and dravvn back to its right place, by applying and uſing cupping-glaſſes. But if it deſcend and fall down into its ovvn neck, but yet not in great quantitie, the vvoman muſt bee placed ſo that her buttocks may bee verie high, and her legs acroſs; then cupping-glaſſes muſt bee applied to her navel and *Hipogaſtrium*, and vvhen the

the womb is ſo brought into its place, injections that binde and drie ſtrongly muſt bee injected into the neck of the womb, ſtinking fumigations muſt bee uſed unto the privie parts, and ſweet things uſed to the mouth and noſe. But if the womb hang down in great quantitie between the thighs, it muſt be cured by placing the woman after another ſort, and by uſing other kinde of medicines. Firſt of all ſhee muſt bee ſo laied on her back, her buttocks and thighs ſo lifted up, and her legs ſo drawn back as when the childe or ſecundine are to bee taken or drawn from her; then the neck of the womb, and whatſoever hangeth out thereat, muſt be anointed with oil of lillies, freſh butter, capons greaſe, and ſuch like, then it muſt be thruſt gently with the fingers up into its place, the ſick or pained woman in the mean time helping or furthering the endeavour by drawing in of her breath as if ſhe did ſup, drawing up as it were that which is fallen down.

For the falling down of the womb, properly ſo called.

After that the womb is reſtored unto its place, whatſoever is filled with the ointment muſt bee wiped with a ſoft and clean cloth, leſt that by the ſlipperineſs thereof the womb ſhould fall down again; the genitals muſt bee fomented with an aſtringent decoction, made with pomegranate pils, cypreſs nuts, gals, roach allom, horſ-tail, ſumach, berberies, boiled in the water wherein Smiths quench their irons; of theſe materials make a powder, wherewith let thoſe places bee ſprinkled: let a peſſarie of a competent bigneſs bee put in at the neck of the womb, but let it bee eight or nine fingers in length, according to the proportion of the grieved patient's bodie. Let them bee made either with latin, or of cork covered with wax, of an oval form, haveing a thread at one end, whereby they may bee drawn back again as need require's.

*The forms of oval peſſaries.*




A. *ſheweth the bodie of the Peſſarie.*
B. *ſheweth the thread wherewith it muſt be tied to the thigh.*

When all this is don, let the ſick woman keep her ſelf quiet in her bed, with her buttocks lying verie high, and her legs acroſs, for the ſpace of eight or ten daies: in the mean while the application of cupping glaſſes will ſtaie the womb in the right place and ſeat after it is reſtored thereunto: but if ſhee hath taken any hurt by cold air, let the privie parts bee fomented with a diſcuſſing and heating fomentation, on this wiſe. ℞. *fol. alth. ſalv. lavend. roriſmar. artemiſ. flor. chamæm. melilot. an.* m ß. *ſem. aniſ. fœnugr. an.* ℥ i. let them bee all well boiled in water and wine, and make thereof a decoction for your uſe. Give her alſo glyſters, that when the guts are emptied of the excrements, the womb may the better bee received into the void and emptie capacitie of the bellie: for this reaſon the bladder is alſo to bee emptied, for otherwiſe it were dangerous leſt that the womb lying between them both beeing ful, ſhould bee kept down and cannot bee put up into its own proper place by reaſon thereof. Alſo vomiting is ſuppoſed to bee a ſingular remedie to draw up the womb that is fallen down: furthermore alſo it purgeth out the phlegm which did moiſten and relax the ligaments of the womb; for as the womb in the time of copulation at the beginning of the conception is moved downwards to meet the ſeed, ſo the ſtomack, even of its own accord, is lifted upwards when it is provoked by the injurie of anie thing that is contrarie unto it, to caſt it out with greater violence, but when it is ſo raiſed up, it draw's up together therewith the *peritonæum*, the womb, and alſo the bodie or parts annexed unto it. If it cannot bee cured or reſtored unto its place by theſe preſcribed remedies, and that it bee ulcerated and ſo putrefied that it cannot be reſtored unto his place again, we are commanded by the precepts of art to cut it away, and then to cure the womb according to art, but firſt it ſhould be tied, and as much as is neceſſarie muſt bee cut off, and the reſt ſeared with a cauterie. There are ſom women that have had almoſt all their womb cut off, without anie danger of their life, as *Paulus* teſtifieth.

A diſcuſſing and hearing fomentation.

How vomiting is proficable to the falling down of the womb.

The cutting away of the womb when it is putrefied. *Lib. 6. Epiſt. 39. lib. 2.*

*John Langius* Phyſician to the Count *Palatine*, writeth that *Carpus* the Chirurgian took out *Epiſt. med.*

the womb of a woman of *Bononia*, hee beeing preſent, and yet the woman lived and was verie well after it. *Antonius Benivenius* Phyſician of *Florence*, writeth that hee was called by *Vgolius* the Phyſician to the cure of a woman whoſe womb was corrupted and fell away from her by pieces, and yet ſhee lived ten years after it.

*Trac. de mirand. morb. cauſ.*

An Hiſtorie.

There was a certain woman, beeing ſound of bodie, of good repute, and about the age of thirtie years, in whom, ſhortly after ſhee had been married the ſecond time, which was in *Anno* 2571. haveing no childe by her firſt husband, the lawful ſigns of a right conception did appear: yet in proceſs of time there aroſe about the lower part of her privities the ſenſ or feeling of a weight or heavineſs, beeing ſo troubleſom unto her by reaſon that it was painful, and alſo for that it ſtopped her urine, that ſhee was conſtrained to diſcloſe her miſchance to *Chriſtopher Mombey* a Surgeon her neighbor dwelling in the Suburbs of S. *Germans*; who haveing ſeen the tumor or ſwelling in her groin, aſſwaged the pain with mollifying, and anodyne fomentations and cataplaſms; but preſently after hee had don this, hee found on the inner ſide of the lip of the orifice of the neck of the womb, an impoſtume rotten and running, as if it had been out of an abſceſs newly broken, with ſanious matter, ſomwhat red, yellow, and pale, running a long time. Yet for all this the feeling of the heavineſs or weight was nothing diminiſhed, but did rather encreaſ daily, ſo that from the year of our Lord 1573. ſhee could not turn herſelf beeing in her bed on this or that ſide, unleſs ſhee laid her hand on her bellie to bear and eaſ herſelf of the weight, and alſo ſhee ſaid when ſhee turned herſelf, ſhee ſeem to feel a thing like unto a bowle to rowle in her bodie unto the ſide whereunto ſhee turned her ſelf, neither could ſhee go to ſtool, or avoid her excrements ſtanding or ſitting, unleſs ſhee lifted up that weight with her hands towards her ſtomach or midriff: when ſhee was about to go ſhee could ſcarce ſet forwards her feet, as if there had ſomthing hanged between her thighs, that did hinder her going. At certain ſeaſons that rotten apoſtume would open or uncloſe of it ſelf, and flow & run with it's wonted ſanious matter, but then ſhee was grievouſly vexed with pain of the head, and all her members, ſwouning, loathing, vomiting, and almoſt choaking, ſo that by the perſwaſion of a fooliſh woman ſhee was induced and contented to take *Antimonium*; the working and ſtrength thereof was ſo great and violent, that after manie vomits, with manie frettings of the guts and watrie dejections or ſtools, ſhee thought her fundament fell down; but beeing certified by a woman that was a familiar friend of hers, unto whom ſhee ſhewed her ſelf, that there was nothing fallen down at or from her fundament, but it was from her womb, ſhee called, in the year of our Lord 1575. Surgeons, as my ſelf, *James Guillemeau*, and *Antonie Vieux*, that wee might help her in this extremitie.

*Antimonium* taken in a potion doth cauſ the womb to fall down.

The ſigns of the ſubſtance of the womb drawn out.

When wee had diligently and with good conſideration weighed the whole eſtate of her diſeaſ, wee agree'd with one conſent, that that which was fallen down ſhould bee cut away, becauſ that by the black color, ſtinking, and other ſuch ſigns, it gave a teſtimonie of a putrefied and corrupted thing. Therefore for two daies wee drew out the bodie by little and little, and piece-meal, which ſeemed unto the Phyſicians that wee had called, as *Alexius*, *Gaudinus*, *Feureus*, and *Violaneus*, and alſo to our ſelvs, to bee the bodie of the womb, which thing wee prooved to bee ſo, becauſ one of the teſticles came out whole, and alſo a thick membrane or skin, beeing the relick of the *mola*, which beeing ſuppurated, and the abſceſs broken, came out by little and little in matter; after that all this bodie was ſo drawn away, the ſick woman began to wax better and better, yet notwithſtanding for the ſpace of nine daies before it was taken away, ſhee voided nothing by ſiege, and her urine alſo was ſtopped for the ſpace of four daies.

After this all things became as they were before, and ſhee lived in good health three months after, and then died of a Pleuriſie that came on her verie ſuddenly, and I haveing opened her bodie, obſerving and marking everie thing verie diligently, could not finde the womb at all, but in ſtead thereof there was a certain hard and callous bodie, which Nature, who is never idle, had framed in ſtead thereof, to ſupplie the want thereof, or to fill the hollowneſs of the bellie.

## CHAP. XLII.

### *Of the tunicle or membrane called* Hymen.

Whether there bee a membrane called *Hymen*.

IN ſom virgins or maidens in the orifice of the neck of the womb there is found a certain tunicle or membrane called of antient writers *Hymen*, which prohibiteth the copulation of a man, and cauſeth a woman to be barren; this tunicle is ſuppoſed by manie, and they not of the common ſort onely, but alſo learned Phyſicians, to bee, as it were, the encloſure of the virginitie or maiden-head. But I could never finde it in anie, ſeeking of all ages from three to twelv, of all that I had under my hands in the Hoſpital of *Paris*.

An Hiſtorie.

Yet once I ſaw it in a virgin of ſeventeen yeers, whom her mother had contracted to a man, and ſhee knew nevertheleſs there was ſomthing in her privie parts that hindered her from

from bearing of children, who desired mee to see her; and I found a verie thin nervous membrane a little beneath the *nymphæ*, neer unto the orifice of the neck of the womb; in the midst there was a verie little hole whereout the terms might flow: I seeing the thickness thereof, cut it in sunder with my sciſſars, and told her mother what shee should do afterwards: and truly shee married shortly after and bore children. *Realdus Columbus* is of my opinion, and saith that this is seen verie seldom, for these are his words: under the *nymphæ* in manie, but not in all virgins, there is another membrane, which when it is present (which is but seldom) it stoppeth, so that the yard cannot bee put into the orifice of the vvomb; for it is verie thick aboov tovvards the bladder, it hath an hole by vvhich the courses flovv out. And hee also addeth, that hee observed it in tvvo young virgins, and in one elder maid. *Lib.11.cap.16.*

*Avicen* writeth, that in virgins in the neck of the womb there are tunicles composed of veins and ligaments verie little, riseing from each part of the neck whereof, which at the first time of copulation are wont to bee broken, and the bloud to run out. *Almansor* writeth, that in virgins, the passage of the neck of the womb is verie wrinkled, or narrow and straight, and those wrinkles to be woven or staied together with manie little veins and arteries, which are broken at the first time of copulation. *Lib.3. sent.21. tract.1.cap.1.*

The trifles of midwives about the membrane called *Hymen.*

These are the judgments of Physitians of this membrane: Midwives will certainly affirm that they know a virgin from one that is defloured, by the breach or soundness of that membrane. But by their report too credulous Judges are soon brought to commit an error. For that Midwives can speak nothing certainly of this membrane, may bee proved by this, becaus that one saith that the situation thereof is in the verie entrance of the privie parts, others saie it is in the midst of the neck of the womb, and others saie it is within at the inner orifice thereof, and som are of an opinion that they saie or suppose that it cannot be seen or perceived before the first birth. But truly of a thing so rare, and which is contrarie to nature, there cannot be anie thing spoken for certaintie. Therefore the blood that commeth out at the first time of copulation, come's not alwaies by the breaking of that membrane, but by the breaking and violating or renting of the little veins which are woven and bespread all over the superficial and inward parts of the womb and neck thereof, descending into the wrinkles, which in those that have not yet used the act of generation, are closed as if they were glewed together: although that those maids that are at their due time of marriage, feel no pain nor no flux of blood, especially if the man's yard be answerable to the neck of the womb; whereby it appear's evidently how greatly the inhabitants of *Fez*, the metropolitan citie of *Mauritania*, are deceived: for *Leo* the African writeth, that it is the custom among them, that so soon as the married man and his spouse are returned home to their houss from the church where they have been married, they presently shut themselves into a chamber, and make fast the door, while the marriage dinner is preparing: in the mean while som old or grave matron standeth waiting before the chamber door, to receiv a bloodie linnen cloth the new married husband is to deliver her there, which when sheehath received, shee bring's it into the midst of all the companie of guests, as a fresh spoil and testimonie of the married wives virginitie, and then for joie thereof they all fall to banquetting solemnly. But if through evil fortune it happeneth that in this time of copulation the spouse bleedeth not in the privie parts, shee is restored again unto her parents, which is a verie great reproach unto them, and all the guests depart home sad, heavie, and without dinner.

What virgins at the first time of copulation do not bleed at their privie parts. *Lib.3.*

The filthie deceit of bauds and harlots.

Moreover, there are som, that having learned the most filthie and infamous arts of bawderie, prostitute common harlots to make gain thereof, making men that are naughtily given to beleev that they are pure virgins, making them to think that the act of generation is verie painful and grievous unto them, as if they had never used it before, although they are verie expert therein indeed; for they do cause the neck of the womb to be so wrinkled and shrunk together, so that the sides thereof shall even almost close or meet together, then they put thereinto the bladders of fishes, or galls of beasts filled full of blood, and so deceiv the ignorant and young lecher, by the fraud and deceit of their evil arts, and in the time of copulation they mix sighs with groanes, and womanlike cryings, and the crocodiles tears, that they may seem to be virgins, and never to have dealt with man before..

## CHAP. XLIII.

*A memorable historie of the membrane called Hymen.*

*Lib. de prest. daemon.cap.38.*

IOhn *Wierus* writeth that there was a maid at Camburge, who in the middest of the neck of the womb, had a thick and strong membrane growing overthwart, so that when the monethlie tearms should come out, it would not permit them, so that thereby the menstrual matter was stopped and flowed back again, which caused a great tumor and distension in the bellie, with great torment, as if shee had been in travell with childe: the midwives beeing called, and having seen and considered all that had been don, and did appear, did all with one voice affirm, that shee sustained the pains of childe-birth, although that the maid her self denied that shee ever dealt with man. Therefore then this foresaid Author was called,

who, when the midwives were void of help and counsel, might help this wretched maid haveing alreadie had here urine stopped now three whole weeks, and perplexed with great watchings, loss of appetite, and loathing: and when hee had seen the grieved place, and marked the orifice of the neck of the womb, hee saw it stopped with a thick membrane; hee knew also that that sudden breaking out of bloud into the womb and the vessels thereof, and the passage for those matters that was stopped, was the caus of her grievous and tormenting pain. And therefore hee called a Chyrurgian presently, and willed him to divide the membrane that was in the midst, that did stop the flux of bloud, which beeing don, there came forth as much black congealed and putrefied bloud as as waighed som eight pounds. In three daies after shee was well and void of all diseas and pain. I have thought it good to set down this example here, becaus it is not worthie to bee noted, and profitable to bee imitated, as the like occasion shall happen.

## CHAP. XLIIII.

*Of the strangulation of the womb.*

What is the strangulation of the womb.

THE strangulation of the womb, or that which commeth from the womb, is an interception or stopping of the libertie in breathing or takeing winde, becaus that the womb, swoln or puffed up by reason of the access of gross vapors and humors that are contained therein, and also snatched as it were by a convulsive motion, by reason that the vessels and ligaments distended with fulnes, are so carried upwards against the midriff and parts of the breast, that it maketh the breath to bee short, and often as if a thing lay upon the breast and pressed it.

Why the womb swelleth.

Moreover, the womb swelleth, becaus there is contained or inclosed in it a certain substance, caused by the defluxion either of the seed or flowers, or of the womb or whites, or of som other humor, tumor, absces, rotten apostume, or som ill juice, putrefying, or getting, or ingendering an ill qualitie, and resolved into gros vapors. These, as they affect sundry or divers places, infer divers and sundrie accidents, as rumbling and noise in the bellie, if it bee in the guts, desire to vomit, after (with seldom vomiting) commeth wearines and loathing of meat, if it trouble the stomach. Choaking with strangulation, if it assail the breast and throat; swooning, if it vex the heart; madnes, or elf that which is contrarie thereto, sound sleep or drousines, if it griev the brain: all which oftentimes proov as malign as the biteing of a mad dog, or equal the stinging or biteings of venemous beasts.

The accidents that com of the strangling of the womb.

What the strangulation that commeth of the corruption of the seed is more dangerous then that that com's of the corruption of the bloud.

It hath been observed, that more grievous symptomes have proceeded from the corruption of the seed, then of the menstrual bloud. For by how much everie thing is more perfect and and noble, while it is contained within the bounds of the integritie of it's own nature, by so much it is the more grievous and perillous, when by corruption it hath once transgressed the laws thereof. But this kinde of accident doth verie seldom griev those women which have their menstrual flux well and orderly, and do use copulation familiarly; but verie often those women that have not their menstrual flux as they should, and do want, and are destitute of husbands, especially if they bee great eaters, and lead a solitarie life. When the vessels and ligaments of the womb are swollen and distended as we said before, so much as is added to their latitude or bredth, so much is wanting in their length: and therefore it hapneth that the womb, beeing remooved out of it's seat, doth one while fall to the right side towards the liver, somtimes to the left towards the milt, somtimes upwards unto the midriff and stomach, somtimes downwards, and so forwards unto the bladder, whereof commeth an Ischurie and strangurie; or backwards, whereof commeth oppression of the straight gut, and and suppression of the excrements, and the *Tenesmus*.

The cauf of the diverf turning of the womb into divers parts of the bodie.

The womb is not so greatly mooved by an accident, but by it self.

But although wee acknowledg the womb to decline to those parts which wee named, yet it is not by accident onely, as when it is drawn by the proper and common ligaments and bands, when they are contracted or made shorter, beeing distended with fulnes, but also of it's self, as when it is forced or provoked through the grief of somthing contrarie to nature that is contained therein: it wandreth somtimes unto one side, and somtimes unto another part with a plain and evident natural motion, like unto the stomach which imbraceth anie thing that is gentle and milde, but avoideth anie thing that is offensive and hurtful; yet wee denie that so great accidents may bee stirred up by the falling of it alone unto this or that side, for then it might happen, that women that are great with childe, whose wombs are so distended by reason that the childe is great, that it doth pres the midriff, might bee troubled with a strangulation like unto this; but much rather by a venemous humor breathing out a malign and gros vapor, not onely by the veins and arteries, but also by the pores that are invisible, which pollute's the faculties of the parts which it toucheth with it's venomous malignitie and infection, and intercept's the functions thereof. Neither doth the varietie of the parts receiving onely, but also of the matter received, caus varietie of accidents.

Whereof com such divers accidents of strangulation of the womb.

For som accidents com by suppression of the terms, others com by corruption of the seed,

ſeed, but if the matter bee cold, it bringeth a drouſineſs, beeing lifted up unto the brain, whereby the woman ſinketh down as if ſhee were aſtoniſhed, and lieth without motion, and ſenſ or feeling, and the beating of the arteries, and the breathing are ſo ſmall, that ſomtimes it is thought they are not at all, but that the woman is altogether dead. If it be more groſs, it inferreth a convulſion; if it participate of the nature of a groſs melancholick humor, it bringeth ſuch heavineſs, fear, and ſorrowfulneſs, that the party that is vexed therewith ſhall ſhall think that hee ſhall die preſently, and cannot bee brought out of his minde by anie means or reaſon: if of a cholerick humor, it cauſſeth the madneſs called *furor uterinus*, and ſuch a pratling, that they ſpeak all things that are to bee concealed; and a giddineſs of the head, by reaſon that the animal ſpirit is ſuddenly ſhaken by the admixtion of a putrefied vapour and hot ſpirit: but nothing is more admirable, then that this diſeaſ taketh the patient ſomtimes with laughing, and ſomtimes with weeping, for ſom at the firſt will weep and then laugh in the ſame diſeaſ and ſtate thereof.

The cauſ of ſleepineſs in the ſtrangulation of the womb.

The cauſ of a drouſie madneſs.

But it exceedeth all admiration which *Hollerius* writeth uſually happened to two of the daughters of the Provoſt of Roven. For they were held with long laughter for an hour or two before the fit, which neither for fear, admonition, nor for any other means they could hold; and their parents chid them, and asked them wherefore they did ſo, they anſwered, that they were not able to ſtay their laughter. The aſſcention of the womb is diligently to bee diſtinguiſhed from the ſtrangulation thereof; for the accidents of the aſſcention and of the ſtrangulation are not one, but the woman is onely oppreſſed with a certain pain of the heart, difficultie of breathing, or ſwouning, but yet without fear, without raveing or idle talking, or any other greater accident.

A hiſtorie.

The aſſcention of the womb is to bee diſtinguiſhed from the ſtrangulation.

Therefore oftentimes contrary cauſſes infer the aſſcention: that is, overmuch drineſs of the womb, laboring through the defect of moiſture, whereby it is forced after too violent and immoderate evacuations of the flowers, and in childe-bed, and ſuch like, and laborious and painful travel in childe-bed, through which occaſion it waxeth hot, contrary to nature, and withereth and turneth it ſelf with a certain violence unto the parts adjoining, that is to ſay, unto the liver, ſtomach and midriff: if haply it may draw ſom moiſture therehence unto it. I omit that the womb may be brought unto it's place upwards by often ſmelling to aromatick things, yet in the mean while it infer's not the ſtrangulation that wee deſcribed before.

## CHAP. XLV.

*The ſigns of imminent ſtrangulation of the womb.*

BEfore that theſe fore-named accidents com, the woman think's that a certain painfull thing ariſeth from her womb unto the orifice of the ſtomach and heart, and ſhee thinketh her ſelf to bee oppreſſed and choaked, ſhee complaineth her ſelf to bee in great pain, and that a certain lump or heavie thing clime's up from the lower parts unto her throat, and ſtoppeth her winde, her heart burneth and panteth. And in manie the womb and veſſels of the womb ſo ſwell, that they cannot ſtand upright on their legs, but are conſtrained to lie down flat on their bellies, that they may bee the leſs grieved with the pain, and to preſs that down ſtrongly with their hands, that ſeemeth to ariſe upwards, although that not the womb it ſelf, but the vapor aſſcendeth from the womb, as wee ſaid before: but when the fitt is at hand, their faces are pale on a ſudden, their underſtanding is darkned, they becom ſlow and weak in the legs, with unableneſs to ſtand. Hereof commeth ſound ſleep, fooliſh talking, interception of the ſenſes, and breath as if they were dead, loſs of ſpeech, the contraction of their legs, and the like.

The womb it ſelf doth not ſo well make the aſſcention as the vapor thereof.

## CHAP. XLVI.

*How to know whether the woman bee dead in the ſtrangulation of the womb, or not.*

I Have thought it meet (becauſ manie women, not onely in ancient times, but in our own and our fathers memorie have been ſo taken with this kinde of ſymptome, that they have been ſuppoſed and laid out for dead, although truly they were alive:) to ſet down the ſigns in ſuch a caſe which do argue life and death. Therefore firſt of all it may be prooved, whether ſhee bee alive or dead, by laying or holding a clear and ſmooth looking-glaſs before her mouth and noſtrils. For, if ſhee breath, although it bee never ſo obſcurely, the thin vapor that commeth out will ſtain or make the glaſs duskie. Alſo a fine douniſh feather taken from under the wing of any bird, or elſ a fine flock beeing held before the mouth, will by the trembling or ſhakeing motion thereof, ſhew that there is ſom breath, and therefore life remaining in the bodie. But you may proov moſt certainly whether there bee anie ſpark of life remaining in the bodie, by blowing ſom ſneeſing powders of pellitorie of Spain, and elebore into the noſtrils. But though there no breath appear, yet

Women liveing taken for dead.

How women that have the ſuffocation of the womb, live onely by tranſpiration without breathing.

must you not judg the woman for dead, for the ſmall vital heat, by which, beeing drawn into the heart, ſhee yet liveth, is contented with tranſpiration onely, and require's not much attraction, which is performed by the contraction and dilatation of the breaſt and lungs unto the preſervation of it's ſelf. For ſo flies, gnats, piſmires and ſuch like, becauſ they are of a cold temperament, live unmoovably incloſed in the caves of the earth, no token of breathing appearing in them, becauſ there is a little heat left in them, which may bee conſerved by the office of the arteries and heart, that is to ſay, by perſpiration, without the motion of the breaſt, becauſ the greateſt uſe of reſpiration is, that the inward heat may bee preſerved by refrigeration and ventilation. Thoſe that do not mark this, fall into that error which almoſt coſt the life of him who in our time firſt gave life to anotomical adminiſtration, that was almoſt decaied and neglected.

How flies, gnats and piſmires do live all the winter without breathing.

Ah ſo ie.

For hee beeing called in Spain to open the bodie of a noble woman which was ſuppoſed dead through ſtrangulation of the womb, behold, at the ſecond impreſſion of the inciſion knife, ſhee began ſuddenly to com to her ſelf, and by the mooving of her members and bodie, which was ſuppoſed to bee altogether dead, and with crying, to ſhew manifeſt ſigns that there was ſom life remaining in her. Which thing ſtrook ſuch an admiration and horror into the hearts of all her friends that were preſent, that they accounted the Phyſician, beeing before of a good fame and report, as infamous, odious and deteſtable, ſo that it wanted but little but that they would have ſcratched out his eies preſently: wherefore hee thought there was no better waie for him, if hee would live ſafe, then to forſake the countrie. But neither could hee ſo alſo avoid the horrible prick and inward wound of his conſcience (from whoſe judgment no offender can bee abſolved) for his inconſiderate dealing, but within few daies after, beeing conſumed with ſorrow, hee died, to the great loſs of the Common-wealth, and the art of Phyſick.

## CHAP. XLVII.

*How to know whether the ſtrangulation of the womb com's of the ſuppreſſion of the flowers, or the corruption of the ſeed.*

The ſigns of ſuffocation of the womb comming of corrupt ſeed.

THere are two chief cauſſes eſpecially, as moſt frequently happening of the ſtrangulation of the womb: but when it proceedeth from the corruption of the ſeed, all the accidents are more grievous and violent: difficultie of breathing goes before, and ſhortly after com's deprivation thereof; the whole habit of the bodie ſeemeth more cold then a ſtone: the woman is a widow; or elſ hath great ſtore or abundance of ſeed, and hath been uſed to the companie of a man, by the abſence whereof ſhee was before wont to be pained with heavineſs of the head, to loath her meat, and to bee troubled with ſadneſs and fear, but chiefly with melancholie. Moreover when ſhee hath ſatiſfied, and everie waie fulfilled her luſt, and then preſently on a ſudden begin's to contain her ſelf. It is verie likely that ſhee is ſuffocated by the ſuppreſſion of the flowers, which formerly had them well and ſufficiently, which formerly had been fed with hot, moiſt and manie meats, and therefore engendring much bloud, which ſitteth much, which is grieved with ſom weight and ſwelling in the region of the bellie, with pain in the ſtomach, and a deſire to vomit, and with ſuch other accidents as com by the ſuppreſſion of the flowers. Thoſe who are free'd from the fit of the ſuffocation of the womb, either by nature or by art, in a ſhort time their color commeth into their faces by little and little, and the whole bodie beginneth to wax ſtrong, and the teeth, that were ſet and cloſed faſt together, begin (the jaws beeing looſed) to open and uncloſe again, and laſtly, ſom moiſture floweth from the ſecret parts with a certain tickling pleaſure; but in ſom women, as in thoſe eſpecially in whom the neck of the womb is tickled with the Midwives finger, in ſtead of that moiſture com's thick and groſs ſeed, which moiſture or ſeed when it is fallen, the womb beeing before as it were rageing, is reſtored unto it's own proper nature and place, and by little and little all ſymptoms vaniſh away. Men by the ſuppreſſion of their ſeed have not the like ſymptomes as women have, becauſ mans ſeed is not ſo cold and moiſt, but far more perfect and better digeſted, and therefore more meet to reſiſt putrefaction, and whiles it is brought or drawn together by little and little, it is diſſipated by great and violent exerciſe.

The ſigns when it com's of the ſuppreſſion of the flowers.

The ſigns of one recovering of or from the ſuffocation of the womb.

Why the ſuppreſſion of the ſeed is not perilous or deadly to men.

## CHAP. XLVIII.

*Of the cure of the Strangulation of the womb.*

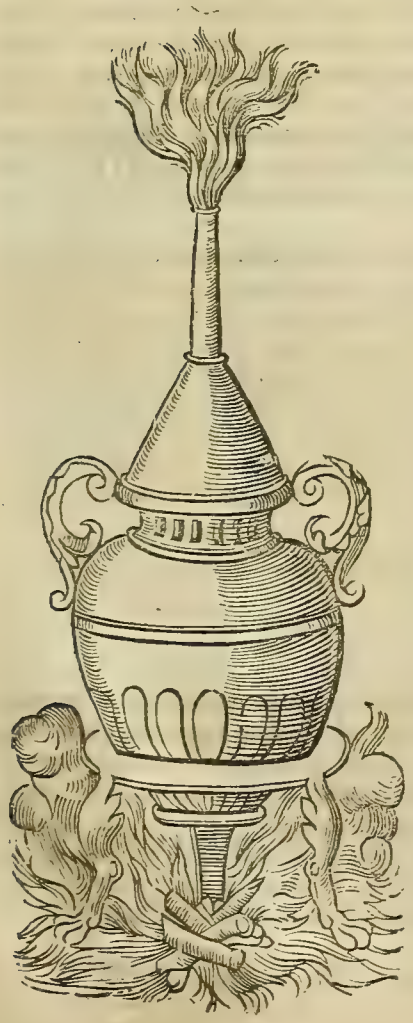
SEeing that the ſtrangulation of the womb is a ſudden and ſharp diſeaſ, it therefore requireth a preſent and ſpeedie remedie, for if it bee neglected it manie times cauſſeth preſent death. Therefore, when this maladie commeth, the ſick woman muſt preſently bee placed on her back, haveing her breaſt and ſtomach looſ, and all her cloaths & garments ſlack & looſ about her, whereby ſhee may take breath the more eaſily; and ſhee

The pulling of the hairs of the low r parts are profitable both for this maladie and for the cauſ of the ſame.

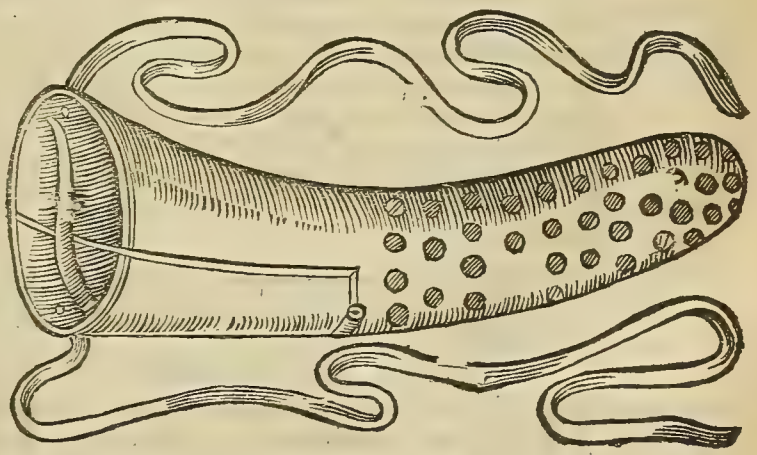
ſhee muſt be called on by her own name, with a loud voice in her ears, and pulled hard by the hairs of the temples and neck, but yet eſpecially by the hairs of the ſecret parts, that by provokeing or cauſſing pain in the lower parts, the patient may not onely bee brought to her ſelf again, but alſo that the ſharp and malign vapor aſcending upwards, may bee drawn downwards: the legs and arms muſt bee bound and tied with painful ligatures, all the bodie muſt bee rubbed over with rough linnen clothes beſprinkled with ſalt and vineger, until it bee verie ſore and red, and let this peſſarie following bee put into the womb. Rx. *ſucci mercurial. artemiſ. an.* ℥ ii. *in quibus diſſolve pul. bened.* ʒ iii. *pul. radic. enulæ camp. galang. minor. an.* ʒ. i. make thereof a peſſarie. Then let the ſoals of her feet bee annointed with oil of baies, or with ſom ſuch like oil, let a great cupping-glaſs with a great flame bee applied to the bellie below the navel, to the inner part of the thigh, and to the groin, whereby both the matter that climes upwards, and alſo the womb it ſelf running the ſame waie, may bee brought downwards or drawn back. There may bee made a fumigation of ſpices to bee received up into the womb, which, that it may bee the eaſier don, the womb may bee held open by putting in this inſtrument here deſcribed into the neck thereof. Let it bee made of gold, ſilver or latin into the form of a peſſarie; at the one end thereof, that is to ſay, that end which goeth up into the neck of the womb, let there bee made manie holes on each ſide, but at the lower end let it bee made with a ſpring, that it may open and ſhut as you will have it. Alſo it muſt have two laces or bands by which it muſt bee made faſt unto a ſwathe or girdle tied about the patient's bellie.

A Peſſarie.

*The deſcription of a veſſel made with a funnel or pipe for to fumigate the womb.*



*The form of a Peſſarie to bee put in the neck of the womb to hold it open.*



The

The matter of ſweet fumigatons.

The matter and ingredients of ſweet and aromatick fumigations, are cinnamom, callam. aromat. lig. aloes, ladanum, benzoin, thyme, pepper, cloves, lavander, calaminth, mugworth, penniroyal, *alepta moſchat.* nutmegs, muſk, amber, ſquinant, and ſuch like, which for their ſweet ſmell and ſympathie, allure or entice the womb downwards, by their heat conſume and digeſt the thick vapors, and putrefied ill juice. Contrariwiſe, let the noſtrils bee perfumed with fetid and rank ſmels, and let theſe bee made with *gum. galbannm, ſagapenum, ammoniacum, aſſa fœtida, bitumen,* oil of Jeat, ſnuff of a tallow-candle when it is blown out, with the fume of bird's fethers, eſpecially of Partridges and Woodcocks, of man's hair or goat's hair, of old lether, of horſ hoofs, and ſuch like things burned, whoſe noiſom or offenfive ſavor the womb avoiding, doth return unto its own place or ſeat again.

By what power ſweet fumigations do reſtore the womb unto its own nature and place.

Stinking ſmels to bee applied to the noſtrils.

*Avicen's* ſecret for ſuffocation of the womb.

Moreover it ſhall bee verie neceſſarie to procure vomit by thruſting a gooſ fether down into the throat, or elſ the hairs of the patient's own head. Shortly after ſhee muſt uſe a potion of fifteen grains of black pepper bruiſed and diſſolved in *hydromel,* or water and honie mixed together, or in ſom ſtrong wine, which remedie *Avicen* holdeth for a ſecret.

*Caſtoreum* drunken.

Alſo in ſtead thereof three hours before meat ʒß. of Treacle diſſolved In ʒi. of the water of wormwood may bee given her : Alſo it is thought that one drop of the oil of Jeat dropped on the tongue, is a verie profitable remedie. There bee ſom that allow a potion of half a dram of *Caſtoreum* diſſolved in white wine, or in the broth of a Capon ; alſo it is profitable not onely to give her Treacle to drink, but alſo to inject it into the womb, beeing firſt diſſolved in *aqua vitæ,* and in the mean time to drop two drops of oil of Sage, or ſom ſuch Chimical oil, into the ears. If ſhee bee drowſie or ſleepie, ſhee muſt bee awaked or kept wakeing with ſneeſing powders, of white hellebore and pellitorie.

Expreſſions into the womb.

The matter of peſſaries.

It is alſo requiſite to inject glyſters both into the fundameut and ſecret parts, which muſt bee made of the decoction of things that diſcuſs winde, as of calamint, mugwort, lavander, penniroyal, cammomil, melilot, and ſuch like ; and let peſſaries or ſuppoſitories bee made of ladanum, ginger, *gallia moſchat.* treacle, mithridate, civet and muſk, of the oil of cloves, anniſeeds, ſage, roſemarie, and ſuch like, chymically drawn ; this following is a convenient deſcription of a glyſter. ℞. *radic. enulæ, ɔamp. Ireos, ebuli, ariſtoloch. an.* ʒi. *fol. abſynth. artemeſiæ, matricar. puleg. origani, an.* m. i. *baccarum laurî, juniperi & ſambuc. an* p. i. *ſem. amios, cymini, rutæ, an.* ʒii. *florum ſtœchados, roriſmarin. ſalviæ, centaur. minor. an.* p. ii. *fiat decoctio, cape colaturæ* ℔. i. *in quâ diſſolve mellis anthoſati, ſacc. rubr. & bened. an.* ʒ i. *diacharth.* ʒii. *olei aneth. mard, an* ʒiſß. make thereof a glyſter, and and applie this plaiſter following to the bellie. ℞. *maſs. empl. oxycrocei, & melilot. an.* ʒiii. *olei nard.* as much as ſhall ſuffice to make it conveniently ſoft, make thereof a plaſter, and ſpread it on leather, and applie it to the region of the bellie when the fit is ended : if ſhee bee married, let her forthwith uſe copulation, and bee ſtrongly encountered by her husband, for there is no remedie more preſent then this.

A glyſter ſcattering groſs vapors.

A quick, certain and a pleaſant remedie for the ſuffocation of the womb.

Tickling of the neck of the womb.

Let the midwife annoint her fingers with *oleum nardinum* or *moſchetalinum,* or of cloves, or elſ of ſpike mixed with muſk, ambergreeſ, civet, and other ſweet powders, and with theſe let her rub or tickle the top of the neck of the womb which toucheth the inner orifice ; but her ſecret parts muſt firſt bee warmed by the applying of warm linnen cloaths, for ſo at length the venomous matter contained in the womb, ſhall bee diſſolved and flow out, and the malign, ſharp and flatulent vapors, whereby the womb is driven as it were into a furie or rage, ſhall bee reſolved and diſſipated, and ſo when the conjunct matter of the diſeaſ is ſcattered and waſted, the womb, and alſo the woman ſhall bee reſtored unto themſelvs again. Som hold it for a ſecret to rub the navel with the juice of garlick boiled and mixed with aloës.

## CHAP. XLIX.

### *Of women's monthly flux or courſes.*

The reaſon of the names of the monthlie flux of women.

USually they call the flux of bloud, that iſſueth from the ſecret parts of women, monthlie flowers or courſes, becauſ it happenth to them everie month ſo long as they are in health. There bee ſom which call them terms, becauſ they return at their uſual time. Manie of the French men call it ſepmains, becauſ in ſuch as fit much, and are given to plentifull feeding, it endureth almoſt for the ſpace of ſeven daies. Som call them purgations, becauſ that by this flux all a woman's bodie is purged of ſuperfluous humors. There bee ſom alſo that call thoſe fluxes the flowers, becauſ that as in plants the flower buddeth out before the fruits ; ſo in women kinde this flux goeth before the iſſue, or the conception thereof.

For the courſes flow not before a woman bee able to conceiv ; for how ſhould the ſeed beeing caſt into the womb have his nouriſhment and increaſ, and how ſhould the childe have his nouriſhment when it is formed of the ſeed, if this neceſſarie humor were wanting in the womb ? yet it may bee ſom women may conceiv without the flux of the courſes : but that is in ſuch as have ſo much of the humor gathered together, as is wont to remain in thoſe which are purged, although it bee not ſo great a quantitie that it may flow out, as it is recorded

What women do conceiv, this flux not appearing at all.

by

by *Ariſtotle*. But as it is in ſom verie great, and in ſom verie little, ſo it is in ſom ſeldom, and in ſom verie often.

There are ſom that are purged twice, and ſom thrice in a moneth, but it is altogether in thoſe who have a great liver, large veins, and are filled and fed with many and greatly nouriſhing meats, which ſit idlely at home all day, which haveing ſlept all night, do notwithſtanding lie in bed ſleeping a great part of the day alſo, which live in a hot, moiſt, rainie and ſoutherly air, which uſe warm baths of ſweet waters and gentle frictions, which uſe and are greatly delighted with carnal copulation: in theſe and ſuch like women the courſes flow more frequently and abundantly. What women have this menſtruall flux often, abundantly, and for a longer ſpace then others.

But contrariwiſe, in thoſe that have ſmall and obſcure veins, in thoſe that have their bodies more furniſhed and big either with fleſh or with fat, are more ſeldom purged, and alſo more ſparingly, becauſ that the ſuperfluous quantitie of blood uſeth to go into the habit of the bodie. Alſo tender, delicate and fair women are leſs purged than thoſe that are brown and endued with a more compact fleſh, becauſ that by the raritie of their bodies, they ſuffer a greater waſting or diſſipation of their ſubſtance by tranſpiration. Moreover, they are not ſo greatly purged with this kinde of purgation, which ſom other ſolemn or accuſtomed evacuation in anie other place of their bodie, as by the noſe or hemorrhoids. What women have this flux more ſeldom, leſs, and a far more ſhort time then others.

And as concerning their age, old women are purged when the Moon is old, and young women when the Moon is new, as it is thought. I think the cauſ thereof is, for that the Moon ruleth moiſt bodies, for by the variable motion thereof the Sea floweth and ebbeth, and bones, marrow and plants abound with their genital humor. Why young women are purged in the new of the Moon.

Therefore young people which have much blood, and more fluxible, and their bodies more fluxible, are ſoon moved unto a flux, although it bee even in the firſt quarter of the Moon's riſing or increaſing: but the humors of old women, becauſ they wax ſtiff as it were with cold, and are not ſo abundant, and have more denſ bodies and ſtraighter veſſels, are not ſo apt to a flux, nor do they ſo eaſily flow, except it bee in the full of the Moon, or elſ in the decreaſ; that is to ſay, becauſ the blood that is gathered in the full of the Moon fall's from the body even of its own weight, for that by reaſon of the decreaſing or wane of the Moon this time of the moneth is more cold and moiſt. Why old women are purged in the wane of the Moon.

## CHAP. L.

*The cauſes of the monethly flux or courſes.*

BEcauſ a woman is more cold, and therefore hath the digeſtive facultie more weak, it cõmeth to paſs, that ſhee requireth and deſireth more meat or food than ſhee can digeſt or concoct: And becauſ that ſuperfluous humor that remaineth is not digeſted by exerciſe, nor by the efficacie of ſtrong and lively heat, therefore by the providence or benefit of nature it floweth out by the veins of the womb, by the power of the expulſive faculty, at its own certain and prefixed ſeaſon or time. But then eſpecially it beginneth to flow, and a certain crude portion of blood to bee expelled, being hurtfull and malign otherwiſe in no qualitie, when nature hath laid her principal foundations of the increaſ of the bodie, ſo that in greatneſs of the bodie, ſhee hath com as it were in a manner to the higheſt top, that is to ſay, from the thirteenth to the fiftieth yeer of our age. The material cauſe of the monethlie flux. When the monethly flux begin's to flow.

Moreover, the childe cannot bee formed in the womb, nor have his nutriment or encreaſ without this flux: therefore this is another finall cauſ of the monethly flux. Manie are perſwaded that women do far more abound with blood than men, conſidering how great an abundance of blood they caſt forth of their ſecret parts everie moneth, from the thirteenth to the fiftieth year of their age: how much women great with childe, of whom alſo manie are menſtruall, yeeld unto the nutriment and encreaſ of the childe in their wombs, and how much Phyſicians take from women that are with childe by opening of a vein, which otherwiſe would bee delivered before their naturall and prefixed time; how great a quantitie thereof they avoid in the birth of their children, and for ten or twelv daies after, and how great a quantitie of milk they ſpend for the nouriſhment of the childe when they give ſuck, which milk is none other thing than blood made white by the power of the kernels that are in the dugs, which doth ſuffice to nouriſh the childe, bee hee great or little; yet notwithſtanding manie nurſes in the mean while are menſtrual: and as that may be true, ſo certainly this is true, that one dram (that I may ſo ſpeak) of a mans blood, is of more efficacie to nouriſh and encreaſ, than two pounds of woman's blood, becauſ it is far more perfect, more concocted, wrought, and better repleniſhed with abundance of ſpirits: whereby it commeth to paſs that a man endued with a more ſtrong heat, doth more eaſily convert what meat ſoever he eateth unto the nouriſhment and ſubſtance of his bodie; and if that anie ſuperfluitie remain's, he doth eaſily digeſt and ſcatter it by inſenſible tranſpiration. But a woman being more cold than a man, becauſ ſhee taketh more than ſhee can concoct, doth gather together more humors, which becauſ ſhee cannot diſperſ, by reaſon of the unperfect- The final cauſ. A woman exceed's a man in quantitie of blood. A man exceedeth a woman in the qualitie of his blood. A man is more hot than a woman, and therefore not menſtrual.

unperfectneſs and weakneſs of her heat, it is neceſſarie that ſhee ſhould ſuffer, and have her monethly purgation, eſpecially when ſhee groweth unto ſom bigneſs; but there is no ſuch need in a man.

## CHAP. LI.

*The cauſſes of the ſuppreſſion of the courſes or menſtruall flux.*

THe courſes are ſuppreſſed or ſtopped by manie cauſſes, as by ſharp, vehement, and long diſeaſes, by fear, ſorrow, hunger, immoderate labors, watchings, fluxes of the bellie, great bleeding, hæmorrhoids, fluxes of blood at the mouth, and evacuations in anie other part of the bodie whatſoever, often opening of a vein, great ſweats, ulcers flowing much and long, ſcabbineſs of the whole skin, immoderate groſneſs and clammineſs of the blood, and by eating of raw fruits, and drinking of cold water, by ſluggiſhneſs and thickneſs of the veſſels, and alſo the obſtruction of them by the defaults and diſeaſes of the womb, by diſtemperature, an abſceſs, an ulcer, by the obſtruction of the inner orifice thereof, by the growing of a Callus, caruncle, cicatrize of a wound or ulcer, or membrane growing there, by injecting of aſtringent things into the neck of the womb, which place manie women endeavor fooliſhly to make narrow: I ſpeak nothing of age, greatneſs with childe, and nurſing of children, becauſ theſe cauſſes are not beſides nature, neither do they require the help of the Phyſitian.

The fooliſh endeavor of making the orifice of the womb narrow, is rewarded with the diſcommoditie of ſtopping of the flowers.

Manie women, when their flowers or tearms be ſtopped, degenerate after a manner into a certain manly nature, whence they are called *Viragines*, that is to ſay, ſtout, or manly women; therefore their voice is more loud and big, like unto a mans, and they become bearded.

What women are called *Viragines*. *Lib.6.epidem ſect 7.*

In the citie *Abdera* (ſaith *Hippocrates*) *Phaethuſa* the wife of *Pytheas* at the firſt did bear children and was fruitful, but when her husband was exiled, her flowers were ſtopped for a long time: but when theſe things happened, her bodie became manlike and rough, and had a beard, and her voice was great and ſhrill. The verie ſame thing happened to *Namyſia* the wife of *Gorgippus* in *Thaſus*. Thoſe virgins that from the beginning have not their monethly flux, and yet nevertheleſs enjoy their perfect health, they muſt neceſſarily be hot and drie, or rather of a manly heat and drineſs, that they may ſo diſperſ and diſſipate by tranſpiration, as men do, the excrements that are gathered, but verily all ſuch are barren.

The women that are called *viragines* are barren.

## CHAP. LII.

*What accidents follow the ſuppreſſion or ſtopping of the monethly flux or flowers.*

WHen the flowers or monethly flux are ſtopped, diſeaſes affect the womb, and from thence paſs into all the whole bodie. For thereof commeth ſuffocation of the womb, headach, ſwouning, beating of the heart, and ſwelling of the breaſts and ſecret parts, inflammation of the womb, an abſceſs, ulcer, cancer, a feaver, nauſeouſneſs, vomitings, difficult and ſlow concoction, the dropſie, ſtrangurie, the full womb preſſing upon the orifice of the bladder, black and bloodie urine, by reaſon that portion of the blood ſweateth out into the bladder. In manie women the ſtopped matter of the monethly flux is excluded by vomiting, urine, and the hæmorrhoids, in ſom it groweth into *varices*. In my wife, when ſhee was a maid, the menſtrual matter was excluded and purged by the noſtrils. The wife of *Peter Feure* of *Caſteaudun*, was purged of her menſtrual matter by the dugs everie moneth, and in ſuch abundance, that ſcarce three or four cloaths were able to drie it and ſuck it up.

Why the ſtrangurie, or bloodineſs of the urine followeth the ſuppreſſion of the flowers.

Hiſtories of ſuch as were purged of their menſtrual flux by the noſe and dugs.

In thoſe that have not the flux monethly to evacuate this plenitude by ſom part or place of the bodie, there often follow's difficultie of breathing, melancholie, madneſs, the gout, an ill diſpoſition of the whole bodie, diſſolution of the ſtrength of the whole bodie, want of appetite, a conſumption, the falling ſickneſs, an apoplexie.

Thoſe whoſe blood is laudable, yet not ſo abundant, do receiv no other diſcommoditie by the ſuppreſſion of the flowers, unleſs it be that the womb burn's or itcheth with the deſire of copulation, by reaſon that the womb is diſtended with hot and itching blood, eſpecially if they lead a ſedentary life. Thoſe women that have been accuſtomed to bear children, are not ſo grieved and evil at eaſe when their flowers are ſtopped by anie chance contrarie to nature, as thoſe women which did never conceiv, becauſ they have been uſed to be filled, and the veſſels by reaſon of their cuſtomarie repletion and diſtention, are more large and capacious: when the courſes flow, the appetite is partly dejected, for that nature, beeing then wholly applied to expulſion, cannot throughly concoct or digeſt, the face waxeth pale, and without its lively color, becauſ that the heat with the ſpirits, go from without inwards, ſo to help and aid the expulſive faculte.

To what women the ſuppreſſion of the moneths is moſt grievous.

## CHAP. LIII.

*Of provoking the flowers or courses.*

THe ſuppreſſion of the flowers is a plethorick diſeaſ, and therefore muſt bee cured by evacuation, which muſt bee don by opening the vein called *Saphena*, which is at the ankle, but firſt let the baſilike vein of the arm bee opened, eſpecially if the bodie bee plethorick, leſt that there ſhould a greater attraction bee made into the womb, and by ſuch attraction or flowing in, there ſhould come a greater obſtruction. When the veins of the womb are diſtended with ſo great a ſwelling that they may bee ſeen, it will bee verie profitable to applie horſ-leeches to the neck thereof: peſſaries for women may bee uſed; but fumigations of aromatick things are more meet for maids, becauſ they are baſhfull and ſhamefac'd. Unguents, liniments, emplaſters, cataplaſms, that ſerv for that matter, are to bee preſcribed and applied to the ſecret parts, ligatures and frictions of the thighs and legs are not to bee omitted, fomentations and ſternutatories are to bee uſed, and cupping glaſſes are to bee applied to the groins, walking, dancing, rideing, often and wanton copulation with her husband, and ſuch like exerciſes, provoke the flowers. Of plants, the flowers of St. John's-Wurt, the roots of fennel, and aſparagus, bruſcus or butcher's-broom, of parſleie, brook-lime, baſil, balm, betonie, garlick, onions, criſta marina, coſtmarie, the rinde or bark of caſſia fiſtula, calamint, origanum, penniroyall, mugwort, thyme, hyſſop, ſage, marjoram, roſemarie, horehound, *rue*, ſavin, ſpurge, ſaffron, agarick, the flowers of elder, baie-berries, the berries of Ivie, ſcammonie, *Cantharides*, *pyrethrum* or pellitorie of Spain, *euphorbium*. The aromatick things are *amomum*, cinnamon, ſquinanth, nutmegs, *calamus aromaticus*, *cyperus*, ginger, cloves, galingal, pepper, cubibes, amber, musk, ſpiknard, and ſuch like; of all which let fomentations, fumigations, baths, broaths, boles, potions, pils, ſyrups, apozemes, and opiates be made as the Phyſicians ſhall think good.

Why the vein called *baſilica* in the arm muſt be opened before the vein *ſaphena* in the foot.

Horſ-leeches to be applied to the neck of the womb.

Plants that provoke the flowers.

Sweet things.

The apozeme that followeth is proved to be verie effectuall. ℞ *fol.& flor.dictam.an.* p ii. *pimpinel.* m ß. *omnium capillar. an.* p i. *artemiſ. thymi, marjor. origan. an.* m ß. *rad.rub.major. petroſelin. fœnicul.an.* ℥ i ß. *rad. pæon.biſtort. an.* ℥ ß. *cicerum rub. ſem. pæon. fœnicul. an.* ℥ ß. make thereof a decoction in a ſufficient quantitie of water, adding thereto cinnamon ℥ iii. in one pint of the decoction diſſolve (after it is ſtrained) of the ſyrup of mugwort, and of hyſſop, *an.* ℥ ii. *diarrhod. abbat.* ℥ i. let it be ſtrained through a bag, with ℥ ii. of the kernels of Dates, and let her take ℥ iiii. in the morning.

An apozeme to provoke the flowers.

Let peſſaries bee made with *galbanum*, *ammoniacum*, and ſuch like mollifying things, beaten into a maſs in a mortar with a hot peſtel, and made into the form of a peſſarie, and then let them bee mixed with oil of Jaſmine, *euphorbium*, an ox-gall, the juice of mugwurt, and other ſuch like, wherein there is power to provoke the flowers, as with ſcammonie in powder: let them be as big as ones thumb, ſix fingers long, and rowled in lawn, or ſom ſuch like thin linnen cloth; of the ſame things nodula's may bee made. Alſo peſſaries may bee prepared with honie boiled, adding thereto convenient powders, as of ſcammonie, pellitorie, and ſuch like. Neither ought theſe to ſtaie long in the neck of the womb, leſt they ſhould exulcerate, and they muſt be pulled back by a thread that muſt bee put through them, and then the orifice of the womb muſt bee fomented with white wine of the decoction of penniroyall or mother-wort.

But it is to be noted, that if the ſuppreſſion of the flowers happeneth through the default of the ſtopped orifice of the womb, or by inflammation, theſe maladies muſt firſt bee cured before we come unto thoſe things that of their proper ſtrength and virtue provoke the flowers: as for example, if ſuch things bee made and given when the womb is inflamed, the blood beeing drawn into the grieved place, and the humors ſharp'ned, and the bodie of the womb heated, the inflammation will bee increaſed. So if there bee anie ſuperfluous fleſh, if there bee anie Callus of a wound or ulcer, or if there bee anie membrane ſhutting the orifice of the womb, and ſo ſtopping the flux of the flowers, they muſt firſt bee conſumed and taken away before anie of thoſe things bee adminiſtred. But the opportunitie of takeing and applying of things, muſt bee taken from the time wherein the ſick woman was wont to bee purged before the ſtopping, or if ſhee never had the flowers, in the decreaſ of the Moon; for ſo wee ſhall have cuſtom, nature, and the external efficient cauſe to help art. When theſe medicines are uſed, the women are not to be put into baths or hot houſes, as manie do, except the maladie proceed from the denſitie of the veſſels, and the groſneſs and clammineſs of the blood. For ſweats hinder the menſtrual flux, by diverting and turning the matter another waie.

What cauſſes of the ſtopping of the flowers muſt be cured before the diſeaſ itſelf.

The fitteſt time to provoke the flowers.

Why hot houſes do hurt thoſe in whom the flowers are to be provoked.

## CHAP. LIIII.

*The ſigns of the approaching of the menſtrual flux.*

WHen the monthlie flux firſt approacheth, the dugs itch and become more ſwoln and hard then they were wont, the woman is more deſirous of copulation, by reaſon of the

What women do love and what women do loath the act of generation when the months are ſtopped.

the ebullition of the provoked blood, and the acrimonie of the blood that remaineth, her voice becommeth bigger, her ſecret parts itch, burn, ſwell, and wax red. If they ſtaie long, ſhee hath pain in her loins and head, nauſeouſneſs and vomiting troubleth the ſtomach: notwithſtanding, if thoſe matters which flow together in the womb, either of their own nature, or by corruption, bee cold, they loath the act of generation, by reaſon that the womb waxeth feeble through ſluggiſhneſs and waterie humors filling the ſame, and it floweth by the ſecret parts verie ſoftly. Thoſe maids that are marriageable, although they have the menſtrual flux verie well, yet they are troubled with headach, nauſeouſneſs, and often vomiting, want of appetite, longing, an ill habite of bodie, difficultie of breathing, trembling of the heart, ſwouning, melancholie, fearfull dreams, watching, with ſadneſs and heavineſs, becauſ that the genital parts burning and itching, they imagine the act of generation, whereby it commeth to paſs that the ſeminal matter, either remaining in the teſticles in great abundance, or elſ powred into the hollowneſs of the womb, by the tickling of the genitals, is corrupted, and acquireth a venemous qualitie, and cauſeth ſuch like accidents as happen's in the ſuffocation of the womb.

With what accidents thoſe that are marriageable and are not married, are troubled.

The cauſ of ſo manie accidents.

Maids that live in the countrie are not ſo troubled with thoſe diſeaſes, becauſ there is no ſuch lying in wait for their maiden-heads, and alſo they live ſparingly and hardly, and ſpend their time in continual labor. You may ſee manie maids ſo full of juice, that it runneth in great abundance, as if they were not menſtrual, into their dugs, and is there converted into milk, which they have in as great quantitie as nurſes, as we read it recorded by *Hippocrates*. If a woman which is neither great with childe, nor hath born children, hath milk, ſhee wants the menſtrual fluxes; whereby you may underſtand that that concluſion is not good which affirmeth that a woman which hath milk in her breaſts, either to be delivered of childe, or to be great with childe: for *Cardanus* writeth that hee knew one *Antonie Buzus* at *Genua*, who beeing thirtie years of age, had ſo much milk in his breaſts as was ſufficient to nurſ a childe; for the breeding and efficient cauſe of milk proceed's not onely from the engrafted facultie of the glandulous ſubſtance, but much rather from the action of the man's ſeed; for proof whereof you may ſee manie men that have verie much milk in their breaſts, and manie women that almoſt have no milk, unleſs they receiv man's ſeed. Alſo women that are ſtrong and luſtie like unto men, which the Latines call *Viragines*, that is to ſay, whoſe ſeed commeth unto a manly nature, when the flowers are ſtopped, concoct the blood, and therefore when it wanteth paſſage forth, by the likeneſs of the ſubſtance it is drawn into the dugs, and becommeth perfect milk: thoſe that have the flowers plentifully and continually for the ſpace of four or five daies, are better purged and with more happie ſucceſs then thoſe that have them for a longer time.

*Aph.36.ſect.5.*

*Lib. 2.de ſubt.*

The efficient cauſ of the milk is to be noted.

## CHAP. LV.

*What accidents follow immoderate fluxes of the flowers or courſes.*

IF the menſtrual flux floweth immoderately, there alſo follow's manie accidents; for the concoction is fruſtrated, the appetite overthrow'n, then follow's coldneſs throughout all the bodie, exolution of all the faculties, an ill habit of all the bodie, leanneſs, the dropſie, an hectick fever, convulſion, ſwouning, and often ſudden death: if a-nie have them too exceeding immoderatly, the blood is ſharp and burning, and alſo ſtinking, the ſick woman is alſo troubled with a continual fever, and her tongue will bee drie, ulcers ariſe in the gums and all the whole mouth. In women the flowers do flow by the veins and arteries which riſe out of the ſpermatick veſſels, and ended in the bottom and ſides of the womb, but in virgins and in women great with childe, whoſe children are ſound and healthful, by the branches of the hypogaſtrick vein and arterie, which are ſpred and diſperſed over the neck of the womb. The cauſ of this immoderate flux is in the quantitie or qualitie of the blood, in both the fault is unreaſonable copulation, eſpecially with a man that hath a yard of a monſtrous greatneſs, and the diſſolution of the retentive facultie of the veſſels: oftentimes alſo the flowers flow immoderately by reaſon of a painful and a difficult birth of the childe or the after-birth, beeing pulled by violence from the cotyledons of the womb, or by reaſon that the veins and arteries of the neck of the womb are torn by the comming forth of the infant with great travel, and manie times by the uſe of ſharp medicines, and exulcerating peſſaries. Oft-times alſo nature avoids all the juice of the whole bodie critically by the womb after a great diſeaſ, which flux is not raſhly or ſuddenly to be ſtopped. That menſtrual blood that floweth from the womb is more groſs, black, and clottie, but that which commeth from the neck of the womb is more clear, liquid and red.

By what pores the flowers do flow in a woman and in a maid.

The cauſſes of an unreaſonable flux of blood.

The critical flux of the flowers.

The ſigns of blood flowing from the womb or neck of the womb.

## CHAP. LVI.

*Of ſtopping the immoderate flowing of the flowers or courſes.*

YOu muſt make choice of ſuch meats and drinks as have power to incraſſate the blood; for as the flowers are provoked with meats that are hot, and of ſubtil parts, ſo they are ſtopped by ſuch meats as are cooling, thickning, aſtringent, and ſtiptick, as are barlie-waters, ſodden rice, the extreme parts of beaſts, as of oxen, calvs, ſheep, either fried or ſodden with ſorrel, purſlain, plantain, ſhepherp's-purſ, ſumach, the buds of brambles, berberries, and ſuch like. It is ſuppoſed that a Hart's-horn burned, waſhed, and taken in aſtringent water, will ſtop all immoderate fluxes; likewiſe *ſanguis draconis, terra ſigillata, bolus armenus, lapis hæmatites*, coral beaten into moſt ſubtil powder, and drunk in ſteeled water; alſo pap made with milk, wherein ſteel hath oftentimes been quenched, and the flowr of wheat, barlie, beans, or rice, is verie effectual for the ſame. Quinces, cervices, medlars, cornelian-berries, or cherries may likewiſe bee eaten at the ſecond courſ, Julips are to bee uſed of ſteeled waters, with the ſyrup of drie roſes, pomegranats, ſorrel, myrtles, quinces, or old *conſervs* of red roſes, but wine is to bee avoided: but if the ſtrength bee ſo extenuated, that they require it, you muſt chuſe groſs and aſtringent wine tempered with ſteeled water; exerciſes are to bee ſhunned, eſpecially venereous exerciſes, anger is to bee avoided, a cold air is to bee choſen, which (if it bee not ſo naturally) muſt bee made ſo by ſprinkling cold things on the ground, eſpecially if the ſummer or heat bee then in his full ſtrength; ſound ſleeping ſtaie's all evacuations, except ſweating. The opening of a vein in the arm, cupping-glaſſes faſtened on the breaſts, bands, and painful frictions of the upper parts are greatly commended in this maladie. *The inſtitution or order of life.*

But if you perceiv that the cauſ of this accident lieth in a cholerick ill juice mixed with the blood, the bodie muſt bee purged with medicines that purge choler and water, as Rubarb, Myrobalanes, Tamarinds, Sebeſtens, and the purgeing ſyrup of Roſes. *Purgeing.*

## CHAP. LVII.

*Of local medicines to bee uſed againſt the immoderate flowing of the Courſes.*

ALſo unguents are made to ſtay the immoderate flux of the terms, and likewiſe injections and peſſaries. This or ſuch like may bee the form of an unguent. ℞. *ol maſtich. & myrt. an.* ℥ii. *nucum cupreſ. olibani, myrtil. an.* ℥ii. *ſucci roſar. rubr.* ℥i. *pulv. maſtichin.* ℥ii. *boli armen. terræ ſigillat. an.* ℥ß. *ceræ quantum ſufficit, fiat unguentum.* *An unguent.* An injection may bee thus made. ℞. *aq. plantag. roſar. rubr. burſæ paſtor. centinodii, an.* ℔ß. *corticis querni, nucum cupreſſi, gallar. non maturar. an.* ℥ii. *berberis, ſumach. balauſt. alumin. roch. an.* ℥i. make thereof a decoction, and inject it in a ſyringe blunt-pointed into the womb, leſt if it ſhould bee ſharp, it might hurt the ſides of the neck of the womb; alſo Snails beaten with their ſhells, and applied to the navel, are verie profitable. Quinces roſted under the coles, and incorporated with the powder of Myrtles, and *Bole-Armenick*, and put into the neck of the womb, are marvellous effectual for this matter. The form of a peſſarie may bee thus. ℞. *gallar. immaturar. combuſt. & in aceto extinctar.* ℥ii. *ammo.* ℥ß. *ſang. dracon. pulv. rad. ſymphyt. ſumach maſtich. ſucci acaciæ, cornu ceruſt. colophon, myrrhæ, ſcoriæ ferri, an.* ℥i. *caphur.* ℈ii. mix them, and incorporate them all together with the juice of knot-graſs, ſyngreen, night-ſhade, hen-bane, water-lillies, plantain, of each as much as is ſufficient, and make thereof a peſſarie. *An aſtringent injection.* *Aſtringent peſſaries.*

Cooling things, as Oxycrate, *unguentum roſatum*, and ſuch like, are with great profit uſed to the region of the loins, thighs, and genital parts: but if this immoderate flux do com by eroſion, ſo that the matter thereof continually exulcerateth the neck of the womb; let the place bee annointed with the milk of a ſhee-Aſs, with barlie-water, or bindeing and aſtringent mucelages, as of *Pſilium*, Quinces, Gum Tragacanth, Arabick, and ſuch like.

## CHAP. LVIII.

*Of Women's Fluxes, or the Whites.*

BEſides the fore-named Flux, which by the law of nature happeneth to women monthly, there is alſo another called a *Woman's Flux*, becauſ it is onely proper and peculiar to them: this ſomtimes wearieth the woman with a long and continual diſtillation from the womb, or through the womb, comming from the whole bodie without pain, no otherwiſe then when the whole ſuperfluous filth of the bodie is purged by the reins or urine; ſomtimes it returneth at uncertain ſeaſons, and ſomtimes with pain and exulcerateing the places of the womb: it differeth from the menſtrual Flux, becauſ that this for the ſpace of a few daies, as it ſhall ſeem convenient to nature, caſteth forth laudable blood; but this *Woman's Flux* yeeldeth impure ill juice, *The reaſon of the name.* *The differences.*

ſomtimes ſanious, ſomtimes ſerous and livid, otherwhiles white and thick, like unto barlie-cream, proceeding from flegmatick blood: this laſt kinde thereof is moſt frequent. Therefore wee ſee women that are flegmatick, and of a ſoft and looſ habit of bodie, to bee often troubled with this diſeaſ; and therefore they will ſay among themſelvs that they have the whites. And as the matter is divers, ſo it will ſtain their ſmocks with a different color. Truely, if it bee perfectly red and ſanguine, it is to bee thought it commeth by eroſion, or the exſolution of the ſubſtance of the veſſels of the womb, or of the neck thereof: therefore it commeth verie ſeldom of blood, and not at all except the woman bee either great with childe, or ceaſ to bee menſtrual for ſom other cauſ; for then in ſtead of the monethly flux there floweth a certain whayiſh excrement, which ſtaineth her cloaths with the color of water wherein fleſh is waſhed.

What women are apt to this flux.

Women's flux commeth verie ſeldom of blood.

Alſo it verie ſeldom proceed's of a melancholick humor, and then for the moſt part it cauſſeth a cancer in the womb. But often-times the purulent and bloodie matter of an ulcer lying hidden in the womb, deceiveth the unskilful Chirurgian or Phyſician: but it is not ſo hard to know theſe diſeaſes one from the other; for the matter that floweth from an ulcer, becauſ (as it is ſaid) it is purulent, it is alſo leſſer, groſſer, ſtinking, and more white. But thoſe that have ulcers in thoſe places, eſpecially in the neck of the womb, cannot have copulation with a man without pain.

By what ſigns an ulcer in the womb may bee known from the white flowers.

## CHAP. LIX.

### *Of the cauſſes of the Whites.*

SOmtimes the cauſ of the Whites conſiſteth in the proper weakneſs of the womb, or elſ in the uncleanneſs thereof; and ſomtimes by the default of the principal parts. For if the brain or the ſtomach bee cooled, or the liver ſtopped or ſchirrous, manie crudities are engendered, which if they run, or fall down into the womb that is weak by nature, they cauſ the Flux of the womb, or Whites: but if this Flux bee moderate, and not ſharp, it keepeth the bodie from malign diſeaſes; otherwiſe it uſeth to infer a conſumption, leanneſs, paleneſs, and an œdematous ſwelling of the legs, the falling down of the womb, the dejection of the appetite and all the faculties, and continual ſadneſs and ſorrowfulneſs; from which it is verie hard to perſwade the ſick woman, becauſe that her minde and heart will bee almoſt broken, by reaſon of the ſhame that ſhee taketh, becauſ ſuch filth floweth continually; it hindereth conception, becauſ it either corrupteth, or driveth out the ſeed when it is conceived. Often-times, if it ſtoppeth for a few months, the matter that ſtaieth there cauſſeth an abſceſs about the womb in the bodie or neck thereof; and by the breaking of the abſceſs there followeth rotten and cancerous ulcers, ſomtimes in the womb, ſomtimes in the groin, and often in the hips.

How a woman's flux is wholſom. How it cauſſeth diſeaſes.

How it letteth the conception.

This diſeaſ is hard to bee cured, not onely by reaſon of it ſelf, as becauſ all the whole filth and ſuperfluous excrements of a woman's bodie floweth down into the womb, as it were into a ſink; becauſ it is naturally weak, hath an inferior ſituation, manie veſſels ending therein; and laſt of all, becauſ the courſes are wont to com through it; as alſo by reaſon of the ſick woman, who often-times had rather die then to have that place ſeen, the diſeaſ known, or permit local medicines to bee applied thereto: for ſo ſaith *Montanus*, that on a time hee was called to a noble woman of *Italie*, who was troubled with this diſeaſ, unto whom hee gave counſel to have cleanſing decoctions injected into her womb, which when ſhee heard, ſhee fell into a ſwound, and deſired her husband never thereafter to uſe his counſel in anie thing.

Why it is hard to bee cured.

An hiſtorie.

## CHAP. LX.

### *The cure of the Whites.*

IF the matter that floweth out in this diſeaſ bee of a red color, it differeth from the natural monthly flux in this onely, becauſ it keep's no order or certain time in its returning. Therefore phlebotomie and other remedies which wee have ſpoken of, as requiſite for the menſtrual flux, when it floweth immoderately, is here neceſſarie to bee uſed. But if it bee white, or doth teſtifie or argue the ill juice of this or that humor by anie other color, a purgation muſt bee preſcribed of ſuch things as are proper to the humors that offend's: for it is not good to ſtop ſuch a flux ſuddenly; for it is neceſſarie, that ſo the bodie ſhould bee purged of ſuch filth or abundance of humors: for they that do haſten to ſtop it, cauſ the dropſie, by reaſon that this ſink of humors is turned back into the liver; or elſ a cancer in the womb, becauſ it is ſtaied there; or a fever, or other diſeaſes, according to the condition of the part that receiveth it. Therfore wee muſt not com to local deterſives, deſiccatives, reſtrictives, unleſs wee have firſt uſed univerſal remedies according to art. Alum-baths, baths of brimſtone, and of bitumen, or iron, are convenient for

If the flux of a woman bee red, wherein it differeth from the menſtrual flux.

A woman's flux is not ſuddenly to bee ſtopped.

What baths are profitable.

for the whites that com of a phlegmatick humor; inſtead whereof baths may bee made of the decoction of herbs that are hot, drie, and indued with an aromatick power, with alom and pebbls, or flint-ſtones red hot thrown into the ſame. Let this bee the form of a cleanſing decoction and injection. ℞. *fol. abſynth. agrimon. centinod. burſ-paſt. an.* m ß. boil them together, and make thereof a decoction, in which diſſolv *mellis-roſar.* ℥ ii. *aloës, myrrhæ, ſalis nitri, an.* ʒi. make thereof an injection, the woman beeing ſo placed on a pillow under her buttocks that the neck of the womb beeing more high, may bee wide open: when the injection is received, let the woman ſet her legs acroſs, and draw them up to her buttocks, and ſo ſhee may keep that which is injected. They that indeavor to drie and binde more ſtrongly, add the juice of *acatia*, green gals, the rindes of pomegranates, roch-alome, romane vitriol, and they boil them in Smiths-water and red-wine; peſſaries may bee made of the like faculties.

What baths are profitable.

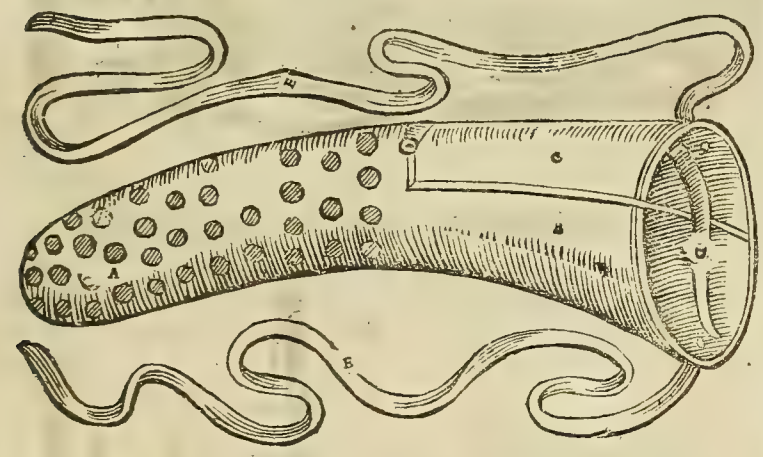
An aſtringent injection.

If the matter that commeth forth bee of an ill color or ſmell, it is like that there is a rotten ulcer; therefore wee ought to inject thoſe things that have power to correct the putrefaction: among which *ægyptiacum*, diſſolved in lie or red-wine, excelleth. There are women which when they are troubled with a virulent *Gonorrhæa*, or an involuntarie flux of the ſeed, cloaking the fault with an honeſt name, do untruly ſay that they have the whites, becauſ that in both theſe diſeaſes a great abundance of filth is avoided. But the Chyrurgian may eaſily perceiv that maladie by the rottenneſs of the matter that floweth out, and hee ſhall perſwade himſelf that it will not bee cured without ſalivation or fluxing at the mouth, and ſweats. In the mean while let him put in an inſtrument made like unto a peſſarie, and cauſ the ſick woman to hold it there: this inſtrument muſt have manie holes in the upper end, through which the purulent matter may paſs, which by ſtaying or ſtopping might get a ſharpneſs; as alſo that ſo the womb may breath the more freely, and may bee kept more temperate and cool by receiving the air, by the benefit of a ſpring whereby this inſtrument, beeing made like unto a peſſarie, is opened and ſhut.

The ſigns of a putrefied ulcer in the womb.

The virulent *Gonorrhæa* is like unto the flux of women.

*The form of an Inſtrument made like unto a Peſſarie, whereby the womb may bee ventilated.*



A. *Sheweth the end of the Inſtrument, which muſt have manie holes therein.*

B. *Sheweth the bodie of the Inſtrument.*

C. *Sheweth the plate whereby the mouth of the Inſtrument is opened and ſhut, as wide and as cloſe as you will, for to receiv the air more freely.*

D. *Sheweth the ſpring.*

EE. *Shew the laces and bands to tie about the patient's bodie, that ſo the Inſtrument may bee ſtaied and kept faſt in his place.*

## CHAP. LXI.

### *Of the* Hœmorrhoïdes *and Warts of the neck of the womb.*

Like as in the fundament, ſo in the neck of the womb, there are *Hæmorrhoïdes*, and as it were varicous veins, often-times flowing with much blood, or with a red and ſtinking whayiſh humor. Som of theſe, by reaſon of their redneſs and great inequalitie as it were of knobs, are like unripe Mulberries, and are called vulgarly *venæ morales*, that is to ſay, the veins or *hæmorrhoïdes* like unto Mulberries: others are like unto Grapes, and therefore are named *uvales*; other ſom are like unto warts, and therefore are called *venæ verrucales*: ſom appear and ſhew themſelvs with a great tumor, others are littl, and in the bottom of the neck of the womb; others are in the ſide or edg thereof. *Achrocordon* is a kinde of wart with a callous bunch or knot, haveing a thin or ſlender root, and a greater head, like unto the knot of a rope, hanging by a ſmall thred; it is called of the Arabians, *verruca botoralis*.

The differences of the *Hæmorrhoïdes* of the neck of the womb.

What an *Acrochordon* is.

There is alſo another kinde of wart, which becauſ of his great roughneſs and inequalitie, is called *thymus*, as reſembling the flower of Thyme. All ſuch diſeaſes are exaſperated and made more grievous by anie exerciſe, eſpecially by venereous acts: manie times they

What a *Thymus* is.

have a certain malignitie, and an hidden virulencie joined with them, by occaſion whereof they are aggravated even by touching onely; becauſ they have their matter of a rageing humor: therefore to theſe wee may not rightly uſe a true, but onely the palliative cure, as they term it: the Latines call them onely *ficus*, but the French men name them with an adjunct,

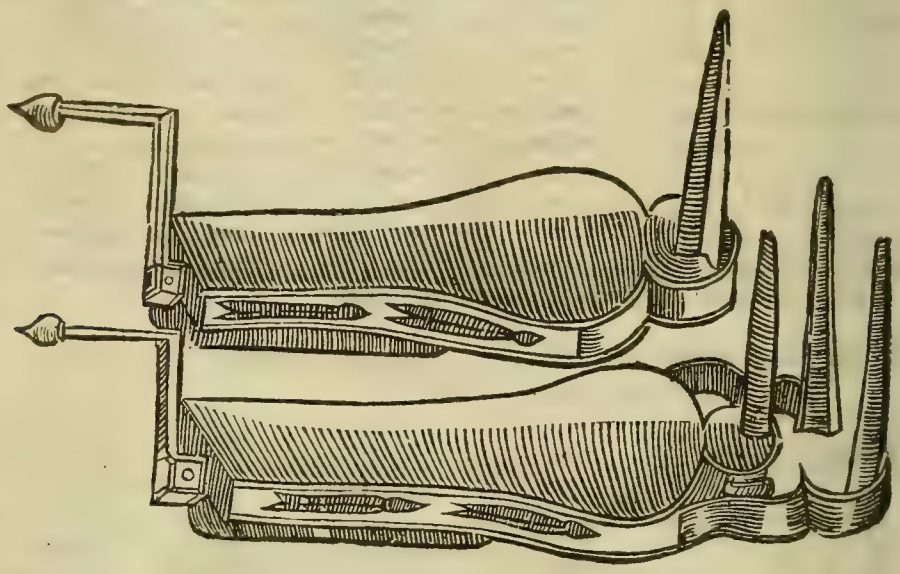
S. *Fiacrius* figs. Saint *Fiacrius* figs.

## CHAP. LXII.

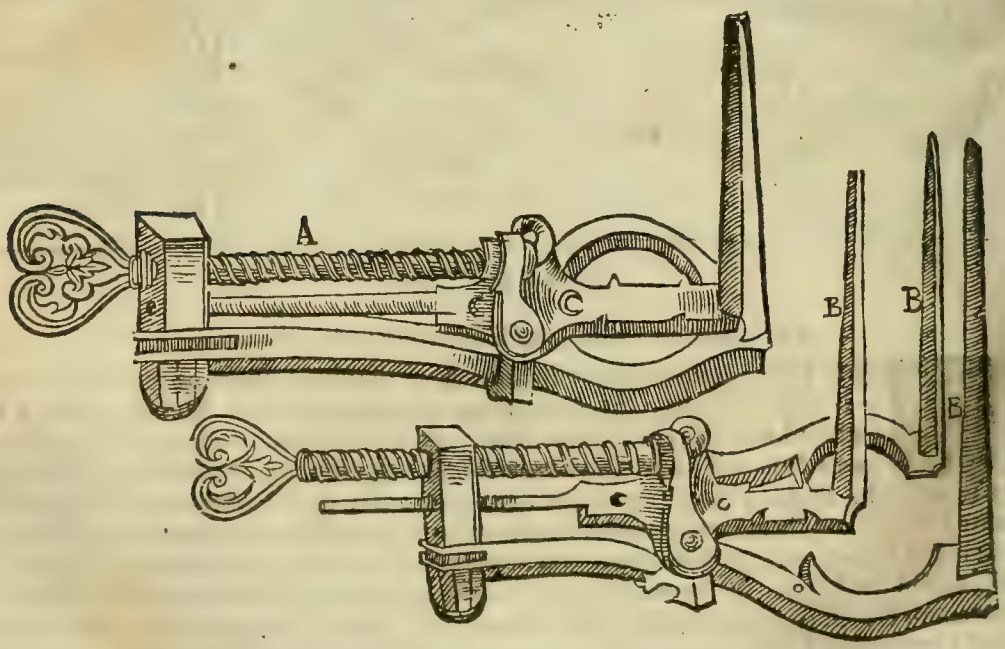
*Of the cure of the Warts that are in the neck of the womb.*

What warts of the womb muſt bee bound, and ſo cut off. THe warts that grow in the neck of the womb, if they bee not malignant, are to bee tied with a thred, and ſo cut off. Thoſe that lie hid more deep in the womb, may bee ſeen and cured by opening the *matrix* with a Dilater made for the purpoſe.

*Divers* Specula matricis, *or Dilaters for the inſpection of the* Matrix.



*Another form of a Dilater, or* Speculum matricis, *whereof the declaration followeth.*




A. *Sheweth the ſcrew, which ſhutteth and openeth the Dilater of the* Matrix.
BB. *Shew the arms or branches of the Inſtrument, which ought to bee eight or nine fingers long.*

But

But these Dilaters of the matrix ought to bee of a bigness, correspondent to the patient's bodie; let them bee put into the matrix, when the woman is placed as wee have said, when the childe is to bee drawn out of her bodie. That instrument is most meet to tie the warts, which wee have described in the relaxation of the palate or *Vvula*: let them bee tied harder and harder everie day until they fall away. Therefore for the cureing of warts there are three chief scopes, as bands, sections, cauteries; and lest they grow up again, let oil of vitriol bee dropped on the place, or *aqua fortis*, or som of the lee whereof potential cauteries are made. This water following is most effectual to consume and waste warts. ℞ *aq.plantag.* ℥vi. *virid.æris*, ʒii. *alum.roch.* ʒiii. *sal com.* ℥ß. *vit.rom & sublim.an.* ʒß. beat them all together, and boil them; let one or two drops of this water bee dropped on the grieved place, not touching anie place elf; but if there bee an ulcer, it must bee cured as I have shewed before. A certain man, studious of physick, of late affirmed to mee, that Ox-dung tempered with the leavs or powder of Savine, would waste the warts of the womb, if it were applied thereto warm; which, whether it bee true or not, let Experience, the mistress of things, bee judg. Verily, *Cantharides* put into unguents will do it, and (as it is likely) more effectually; for they will consume the callousnes which groweth between the toes or fingers. I have prooved by experience, that the warts that grow on the hands, may bee cured by applying of Purslain beaten or stamp't in its own juice. The leavs and flowers of Marigolds do certainly perform the self-same thing.

Three scopes of the cure of warts in the womb.

An effectual water to consume warts.

Unguents to consume warts.

## CHAP. LXIII.

*Of Chaps, and those wrinkled and hard excrescences, which the Greeks call* Condylomata.

CHaps or Fissures, are cleft and verie long little Ulcers, with pain verie sharp and burning, by reason of the biteing of an acrid, salt and drying humor, makeing so great a contraction, and often-times narrowness in the fundament and the neck of the womb, that scarcely the top of one's finger may bee put into the orifice thereof, like unto pieces of leather or parchment, which are wrinkled and parched by holding of them to the fire. They rise somtimes in the mouth, so that the patient can neither speak, eat, nor open his mouth, so that the Surgeon is constrained to cut it. In the cure thereof, all sharp things are to bee avoided, and those which mollifie are to bee used, and the grieved place or part is to bee moistened with fomentations, liniments, cataplasms, emplasters; and if the maladie bee in the womb, a dilater of the matrix or pessarie must bee put thereinto verie often, so to widen that which is over hard, and too much drawn together or narrow, and then the cleft little ulcers must bee cicatrized. *Condylomata* are certain wrinkled and hard bunches, and as it were excrescences of the flesh, riseing especially in the wrinkled edges of the fundament and neck of the womb. Cooling and relaxing medicines ought to bee used against this diseas, such as are oil of eggs, and oil of lin-seed, take of each of them two ounces, beat them together a long time in a leaden mortar, and therewith anoint the grieved part; but if there bee an inflammation, put thereto a little Camphir.

What Chaps are.

The cure.

What *Condylomata* are.

The cure.

## CHAP. LXIV.

*Of the itching of the womb.*

IN women, especially such as are old, there often-times commeth an itching in the neck of the womb, which doth so trouble them with pain, and a desire to scratch, that it taketh away their sleep. Not long since a woman asked my counsel, that was so troubled with this kinde of maladie, that shee was constrained to extinguish or stay the itching burning of her secret parts by sprinkling cinders of fire, and rubbing them hard on the place. I counselled her to take *ægypt.* dissolved in sea-water or lee, and inject it in her secret parts with a syringe, and to wet *stupes* of flax in the same medicine, and put them up into the womb, and so shee was cured. Manie times this itch commeth in the fundament or testicles of aged men, by reason of the gathering together or conflux of salt flegm, which when it falleth into the eies, it causeth the patient to have much ado to refrain scratching: when this matter hath dispersed into the whole habit of the bodie, it causeth a burning or itching scab, which must bee cured by a cooling and a moistning diet, by phlebotomie and purgeing of the salt humor, by baths and horns applied, with scarification and annointing of the whole bodie with the unction following. ℞ *axung.porcin.recent.* ℔iß. *sap.nig.vel gallici, salis nitri, assat. tartar. staphisag. an.* ℥ß. *sulph.viv.* ℥i. *argent.viv.* ℥ii. *acet. ros. quart.* i. incorporate them all together, and make thereof a liniment according to art, and use it as is said before: *unguentum enulatum cum mercurio* is thought to have great force, not without desert, to asswage

What the itch of the womb

A historie.

The cauſ of the itch.

The virtue of *unguent. enulat.*

the itch, and drie the ſcab. Som uſe this that followeth. R. *alum.ſpum.nitr.ſulph.viv.an.* ℥vi. *ſtaphiſ.* ℥i. let them all bee diſſolved in vinegar of Roſes, adding thereto *butyr.recent.q.ſ.* make thereof a liniment for the fore-named uſe.

## CHAP. LXV.

*Of the relaxation of the great Gut, or Inteſtine, which happeneth to women.*

The cauſ. MAnie women that have had great travel and ſtrains in childe-birth, have the great Inteſtine (called of the Latines *craſſum inteſtinum*) or Gut, relaxed and ſlipped down; which kinde of affect happeneth much to children, by reaſon of a phlegmatick humor moiſtening the *ſphincter*-muſcle of the fundament, and the two others called *Levatores*. For the cure thereof, firſt of all the Gut called *rectum inteſtinum*, or the ſtraight Gut, is to bee fomented with a decoction of heating and reſolving herbs, as of Sage, Roſemarie, Lavander, Thyme, and ſuch like; and then of aſtringent things, as of Roſes, Myrtils, the rindes of Pomegranats, Cypreſs-nuts, Galls, with a little Alum, then it muſt bee ſprinkled with the powder of things that are aſtringent without biteing: and laſt of all, it is to bee reſtored, and gently put into its place. That is ſuppoſed to bee an effectual and ſingular remedie for this purpoſe, which is made of twelv red Snails put into a pot with ℥ß. of Alum, and as much of Salt, and ſhaken up and down a long time, for ſo at length when they are dead there will remain an humor, which muſt bee put upon Cotton, and applied to the Gut that is faln down. By the ſame cauſ (that is to ſay, of painful childe-birth in ſom women) there ariſeth a great ſwelling in the navel; for when the *peritonæum* is relaxed or broken, ſomtimes the Kall, and ſomtimes the Guts ſlip out: manie times flatulencies com thither: the cauſ, as I now ſhewed, is over great ſtraining or ſtretching of the bellie, by a great burthen carried in the womb, and great travel in childe-birth: if the faln-down Guts make that tumor, pain joined together with that tumor doth vex the patient; aud if it bee preſſed, you may hear the noiſ of the Guts going back again: if it bee the Kall, then the tumor is ſoft, and almoſt without pain; neither can you hear anie noiſ by compreſſion: if it bee winde, the tumor is looſ and ſoft, yet it is ſuch as will yeeld to the preſſing of the finger with ſom ſound, and will ſoon return again: if the tumor bee great, it cannot bee cured, unleſs the *peritonæum* bee cut, as it is ſaid in the cure of ruptures. In the Church-porches of *Paris*, I have ſeen Beggar-women, who by the falling down of the Guts, have had ſuch tumors as big as a bowl, who notwithſtanding could go, and do all other things as if they had been ſound, and in perfect health: I think it was, becauſ the *fæces* or excrements, by reaſon of the greatneſs of the tumor, and the bigneſs or wideneſs of the Inteſtines, had a free paſſage in and out.

The cure.

An effectual remedie.

The differences and ſigns.

An hiſtorie.

## CHAP. LXVI.

*Of the relaxation of the navel in children.*

OFten-times in children newly born, the navel ſwelleth as big as an egg, becauſ it hath not been well cut or bound, or becauſ the whayiſh humors are flowed thither, or becauſ that part hath extended it ſelf too much by crying, by reaſon of the pains of the fretting of the childe's guts, manie times the childe bringeth that tumor joined with an abſceſs with him from his mother's womb: but let not the Chirurgian aſſay to open that abſceſs, for if it bee opened, the guts com out through the inciſion, as I have ſeen in manie, and eſpecially in a childe of my Lord *Martigues*; for when *Peter* of the Rock, the Chirurgian, opened an abſceſs that was in it, the bowels ran out at the inciſion, and the infant died; and it wanted but little that the Gentlemen of my Lord's retinue that were there, had ſtrangled the Chirurgian. Therefore when *Iohn Gromontius* the Carver deſired mee, and requeſted mee of late that I would do the like in his ſon, I refuſed to do it, becauſ it was in danger of its life by it alreadie, and in three daies after the abſceſs broke, and the bowels guſhed out, and the childe died.

An abſceſs not to bee opened.

An hiſtorie.

## CHAP. IX.

*Of the pain that children have in breeding of teeth.*

The time of breeding of the teeth.

CHildren are greatly vexed with their teeth, which cauſ great pain when they begin to break, as it were, out of their ſhell or ſheath, and begin to com forth, the gums beeing broken, which for the moſt part happeneth about the ſeventh month of the childe's age. This pain commeth with itching and ſcratching of the gums, an inflammation, flux of the bellie, whereof manie times commeth a fever, falling of the hair, a convulſion, at length death. The cauſ of the pain

pain is the ſolution of the continuitie of the gums by the comming forth of the teeth. The ſignes of that pain is an unaccuſtomed burning, or heat of the childe's mouth, which may bee perceived by the nurſ that giveth it ſuck, a ſwelling of the gums and cheeks, and the childe's beeing more way-ward and crying then it was wont, and it will put its fingers to its mouth, and it will rub them on its gums as though it were about to ſcratch, and it ſlavereth much. That the Phyſician may remedie this, hee muſt cure the nurſ as if ſhee had the fever, and ſhee muſt not ſuffer the childe to ſuck ſo often, but make him cool and moiſt when hee thirſteth by giving him at certain times *ſyrupus alexandrinus*, *ſyrup. de limonibus*, or the ſyrup of pomegranats with boiled water; yet the childe muſt not hold thoſe things that are actually cold long in his mouth, for ſuch by bindeing the gums, do in ſom ſort ſtay the teeeth that are newly comming forth; but things that lenifie and mollifie are rather to bee uſed, that is to ſay, ſuch things as do by little and little relax the looſ fleſh of the gums, and alſo aſſwage the pain. Therefore the Nurſ ſhall often-times rub the childe's gums with her fingers, annointed or beſmeared with oil of ſweet al monds, freſh-butter, honie, ſugar, mucilage of the ſeeds of *pſilium*, or of the ſeeds of marſh-mallows extracted in the water of pelletorie of the wall. Som think that the brain of a hare, or of a ſucking pig roſted or ſodden, through a ſecret propertie, are effectual for the ſame: and on the outſide ſhall bee applied a cataplaſm of barlie-meal, milk, oil of roſes, and the yelks of egs. Alſo a ſtick of liquorice ſhaven and bruiſed and annointed with honie, or anie of the forenamed ſyrups, and often rubbed in the mouth or on the gums, is likewiſe profitable: ſo is alſo anie toie for the childe to plaie withall, wherein a wolve's tooth is ſet, for this by ſcratching doth aſſwage the painfull itching, and rarifie the gums, and in ſom weareth them that the teeth appear the ſooner. But manie times it happeneth that all theſe and ſuch like medicines profit nothing at all, by reaſon of the contumacie of the gums, by hardneſs or the weakneſs of the childe's nature: therefore in ſuch a cauſ, before the fore-named mortal accidents com, I would perſwade the Chirurgian to open the gums in ſuch places as the teeth bunch out with a little ſwelling, with a knife or lancet, ſo breaking and opening a waie for them, notwithſtanding that a little flux of blood will follow by the tenſion of the gums: of which kinde of remedie I have with proſperous and happie ſucceſs made trial in ſom of mine own children, in the preſence of *Feureus*, *Altinus*, and *Cortinus*, Doctors of Phyſick, and *Guillemeau* the King's Chirurgian, which is much better and more ſafe then to do as ſom nurſes do, who taught onely by the inſtinct of nature, with their nails and ſcratching, break and tear, or rent the children's gums. The Duke of *Nevers* had a ſon of eight months old, which died of late, and when wee, with the Phyſicians that were preſent, dili gently ſought for the cauſ of his death, wee could impute it unto nothing elſ, then to the contumacious hardneſs of the gums, which was greater then was convenient for a childe of that age; for therefore the teeth could not break forth, nor make a paſſage for themſelvs to com forth: of which our judgment this was the trial, that when wee cut his gums with a knife, wee found all his teeth appearing as it were in an arraie, readie to com forth, which if it had been don wh en hee lived, doubtleſs hee might have been preſerved.

The cauſ of the pain in breeding teeth.

The ſigns.

The cure.

What power ſcratching of the gums hath to aſſwage the pain of them.

An hiſtorie.

*The end of the twentie fourth Book.*

# Of *Monsters* and *Prodigies*.

## *The twentie fifth Book.*

### THE PREFACE.

What a Monster is.

What a Prodigie is.

WE call *Monsters*, what things soever are brought forth contrarie to the common decree and order of nature. So wee term that infant monstrous, which is born with one arm alone, or with two heads. But wee define Prodigies, those things which happen contrarie to the whole cours of nature, that is, altogether differing and dissenting from nature: as if a woman shauld bee delivered of a Snake, or a Dog. Of the first sort are thought all those, in which anie of those things, which ought, and are accustomed to bee, according to nature, is wanting, or doth abound, is changed, worn, covered or defended, hurt, or not put in his right place: for somtimes som are born with more fingers then they should, othersom but with one finger: som with those parts divided which should bee joined, others with those parts joined which should bee divided: som are born with the privities of both sexes, male and female. And Aristotle saw a Goat with a horn upon her knee. No liveing creature was ever born which wanted the Heart, but som have been seen wanting the Spleen, others with two Spleens, and som wanting one of the Reins. And none have bin known to have wanted the whole Liver, although som have been found that had it not perfect and whole: and there have been those which wanted the Gall, when by nature they should have had it: and besides it hath been seen that the Liver, contrarie to his natural site, hath lien on the left side, and the Spleen on the right. Som women also have had their privities closed, and not perforated, the membranous obstacle, which they call the Hymen, hindering. And men are somtimes born with their fundaments, ears, noses, and the rest of the passages shut, and are accounted monstrous, nature erring from its entended scope. But to conclude, those Monsters are thought to portend som ill, which are much differing from their nature.

*Lib.4.gen.anim. cap.4.*

### CHAP. I.

*Of the caus of Monsters; and first of those Monsters which appear for the glorie of God, and the punishment of mens wickednes.*

THere ape reckoned up manie causes of Monsters; the first whereof is the glorie of God, that his immens power may bee manifested to those which are ignorant of it, by the sending of those things which happen contrarie to nature: for thus our *Savior* Christ answered the *Disciples* (asking whether *hee* or his *parents* had offended, who beeing *born blinde*, received his sight from him) that neither *hee* nor his *parents* had committed anie fault so great, but this to happened onely that the *glorie* and majestie of God should bee divulged by that miracle, and such great works.

Another caus is, that God may either punish men's wickednes, or shew signs of punishment at hand, becaus parents somtimes lie and join themselvs together without law and measure, or luxuriously and beastly, or at such times as they ought to forbear by the command of God and the Church, such monstrous, horrid and unnatural births do happen.

*The figure of a Colt with a man's face.*

At *Verona Anno Dom.* 1254. a mare foaled a colt with the perfect face of a man, but all the rest of the bodie like an hors: a little after that, the war between the *Florentines* and *Pisans* began, by which all *Italie* was in a combustion.

About

*The figure of a winged Monster.*

About the time that Pope *Julius* the second raised up all *Italie*, and the greatest part of Christendom, against *Lewis* the twelfth the King of *France*, in the year of of our Lord 1512. (in which year, upon Easter daie, near *Ravenna* was fought that mortal battel, in which the Pope's forces were overthrown) a monster was born in *Ravenna*, haveing a horn upon the crown of his head, and besides, two wings, and one foot alone, most like to the feet of birds of prey, and in the knee thereof an eie, the privities of male and female, the rest of the bodie like a man, as you may see by this figure.

The third caus is, an abundance of seed and overflowing matter. The fourth, the same in too little quantitie, and deficient. The fift, the force and efficacie of imagination. The sixt, the straightnes of the womb. The seventh, the disorderly site of the partie with childe, and the position of the parts of the bodie. The eight, a fall, strain or stroak, especially upon the bellie of a woman with childe. The ninth, hereditarie diseases, or affects by anie other accident. The tenth, the confusion and mingling together of the seed. The eleventh, the craft and wickednes of the divel. There are som others which are accounted for monsters, becaus their original or essence full of admiration, or do assume a certain prodigious form by the craft of som begging companions; therefore wee will speak briefly of them in their place in this our treatise of monsters.

## CHAP. II.

*Of Monsters caussed by too great abundance of seed.*

SEeing wee have already handled the two former and truly final causses of monsters, wee must now com to those which are material, corporeal and efficient causes, takeing our beginning from that wee call the too great abundance of the matter of seed. It is the opinion of those Philosophers which have written of monsters, that if at anie time a creature bearing one at once, as man, shall cast forth more seed in copulation then is necessarie to the generation of one bodie, it cannot bee that onely one should bee begot of all that; therefore from thence either two or more must arise: whereby it commeth to pass, that these are rather judged wonders, becaus they happen seldom, and contrarie to common custom. Superfluous parts happen by the same caus, that twins and manie at one birth, contrarie to nature's cours, do chance, that is, by a larger effusion of seed then is required for the frameing of that part, that so it exceed's either in number or elf in greatnes. So *Austin* tell's that in his time in the East an infant was born, haveing all the parts from the bellie upwards double, but from thence downwards single and simple: for it had two heads, four eies, two breasts, four hands, in all the rest like to another childe, and it lived a little while. *Cælius Rhodiginus* saith hee saw two monsters in *Italie*, the one male, the other female, handsomly and neatly made through all their bodies, except their heads, which were double; the male died within a few daies after it was born; but the female (whose shape is here delineated) lived twenty-five years, which is contrarie to the common custom of monsters; for they for the most part are verie short-liv'd, becaus they both live and are born, as it were, against nature's consent; to which may bee added, they do not love themselvs, by reason they are made a scorn to others, and by that means lead a hated life.

Monsters are seldom long-lived.

But

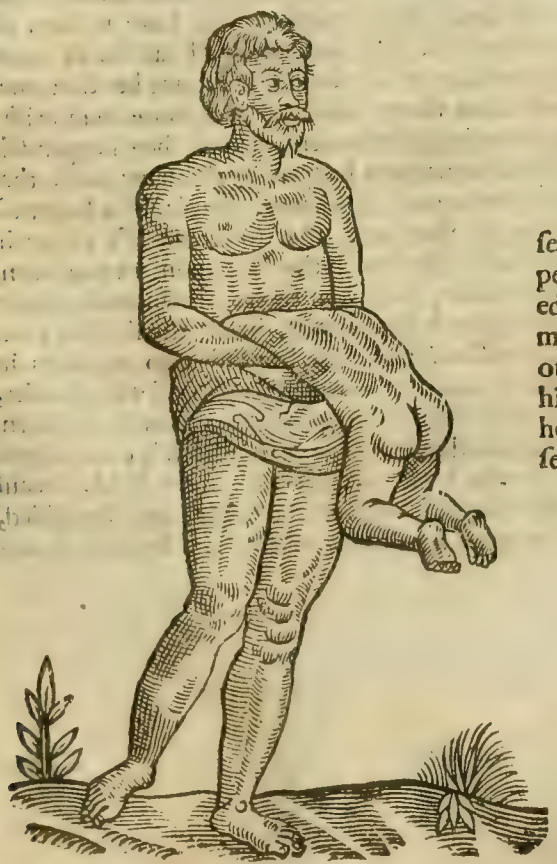
But it is most remarkable which *Lycosthenes* telleth of a * Woman-monster, for, excepting her two heads, shee was framed in the rest of her bodie to an exact perfection: her two heads had the like desire to eat and drink, to sleep, to speak, and to do everie thing; shee begged from door to door, everie one giveing to her freely. Yet at length shee was banish't *Bavaria*, lest that by the frequent looking upon her, the imagination of women with childe, strongly mooved, should make the like impression in the infants they bare in their wombs.

*The effigies of a * Maid with two heads.*

*The effigies of two [a] Girls whose backs grew together.*

In the year of our Lord 1475. at *Verona* in *Italie*, two [a] Girls were born with their backs sticking together from the lower part of the shoulders unto the verie buttocks. The novelty and strangeness of the thing mooved their parents, beeing but poor, to carrie them through all the chief towns in *Italie* to get monie of all such as came to see them.

*The figure of a man with another growing out of him.*



In the year 1530. there was a man to bee seen at *Paris*, out of whose bellie another, perfect in all his members except head, hanged forth as if hee had been grafted there. The man was fortie years old, and hee carried the other implanted or growing out of him, in his arms, with such admiration to the beholders, that manie ran verie earnestly to see him.

The

*The effigies of a horned or hooded monster.*

At *Quiers*, a small village som ten miles from *Turine* in *Savoy*, in the year 1578. upon the seventeenth daie of Januarie, about eight a clock at night, an honest matron brought forth a childe haveing five horns, lik to Ram's horns, set opposite to one another upon his head: hee had also a long peece of flesh, like in som sort to a French-hood which women used to wear, hanging down from his forehead by the nape of his neck almost the length of his back: two other peeces of flesh, like the collar of a shirt, were wrapped about his neck: the finger's ends of both his hands somwhat resembled a Hawk's talons, and his knees seemed to bee in his hams; the right leg and the right foot were of a verie red color; the rest of the bodie was of a tawnie color: it is said hee gave so terrible a scritch when hee was brought forth, that the Midwives, and the rest of the women that were at her labor, were so frighted that they presently left the hous and ran away. When the Duke of *Savoy* heard of this monster, hee commanded it should bee brought to him, which performed, one would hardly think what various censures the Courtiers gave of it.

The monster you see here delineated, was found in the middle and innermost part of an * Egg, with the face of a man, but hairs yeelding a horrid representation of Snakes; the chin had three other snakes stretched forth like a beard. It was first seen at *Autun*, at the hous of one *Bancheron a* Lawyer, a maid breaking manie egs to butter: the white of this egg given a Cat, presently killed her. Lastly this monster comming to the hands of the Baron *Senecy*, was brought to King *Charls* the ninth beeing then at *Metz*.

*The shape of a monster found in an* * *Egg.*

*The effigies of a monstrous* b *Childe, haveing two heads, two arms and four legs.*

In the year 1546. a woman at *Paris* in her sixt month of her account, brought forth a b Childe haveing two heads, two arms and four legs: I, dissecting the bodie of it, found but one heart, by which one may know it was but one infant. For you may know this from *Aristotle*, whether the monstrous birth bee one or more joined together, by the principal part: for if the bodie have but one heart, it is but one; if two, it is double by the joining together in the conception.

In

In the year 1569. a certain woman of *Towers* was delivered of * Twins joined together with one head, and mutually embraceing each other. *Renatus Ciretus* the famous Chirurgian of those parts, sent mee their *Sceleton.*

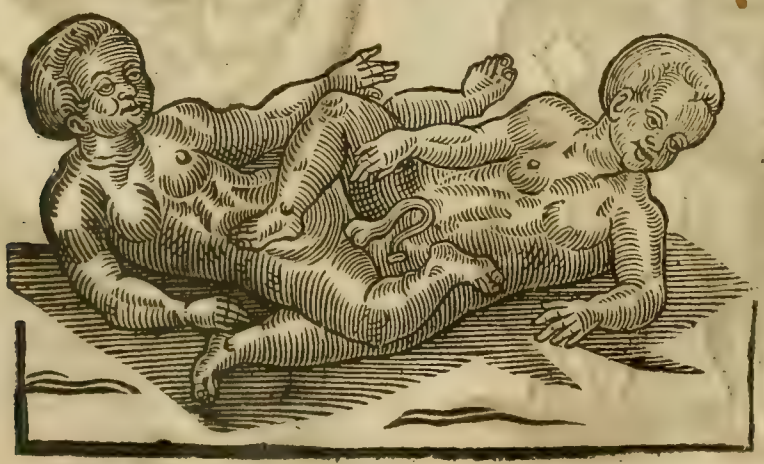
*The portraiture of * Twins joined together with one head.*

*The effigies of two ♀ Girls beeing twins, joined together by their fore-heads.*

*Munster* write's that in the village *Bristant*, not far from *Worms*, in the year 1495. hee saw two ♀ Girls perfect and entire in everie part of their bodies, but they had their foreheads so joined together that they could not bee parted or severed by anie art: they lived together ten years; then the one dying, it was needful to separate the liveing from the dead: but shee did not long out-live her sister, by reason of the malignitie of the wound made in parting them asunder.

In the year of our Lord 1570: the twentieth of Julie, at *Paris*, in the street *Gravilliers*, at the sign of the Bell, these two infants were born, differing in sex, with that shape of bodie that you see here expressed in the figure. They were baptized in the Church of S. *Nicolas* of the fields, and named *Ludovicus* and *Ludovica*, their father was a Mason, his name was *Peter Germane*, his surname *Petit Dieu* (*i.*) little-God, his mother's name was *Mathea Petronilla.*

*The shape of the infants lately born at* Paris.



In

In the year 1572 in *Pont de See*, near *Angers* a little town, were born upon the tenth daie of Julie, two girls, perfect in their limbs, but that they had but four fingers apiece on their left hands: they clave together in their fore parts, from their chin to their navel, which was but one, as their heart also but one; their liver was divided into four lobes: they lived half an hour, and were baptized.

*The figure of two girls joined together in their breasts and bellie.*

*The figure of a childe with two heads, and the bodie as big as one of four moneths old.*

*Var. lect. lib. 24 cap. 8.*

*Cælius Rhodiginus* tell's, that in a town of his countrie called *Sarzano*, *Italie* beeing troubled with civil Wars, there was born a monster of unusual bigness; for hee had two heads, having all his limbs answerable in greatness and tallness to a childe of four months old: between his two heads, which were both alike, at the setting on of the shoulder, it had a third hand put forth, which did not exceed the ears in length, for it was not all seen: it was born the 5. of the Ides of *March*, 1514.

*The figure of one with four legs and as manie arms.*

*Jovianus Pontanus* tell's in the year 1529. the ninth daie of Januarie, there was a man childe born in Germanie, haveing four arms, and as many legs.

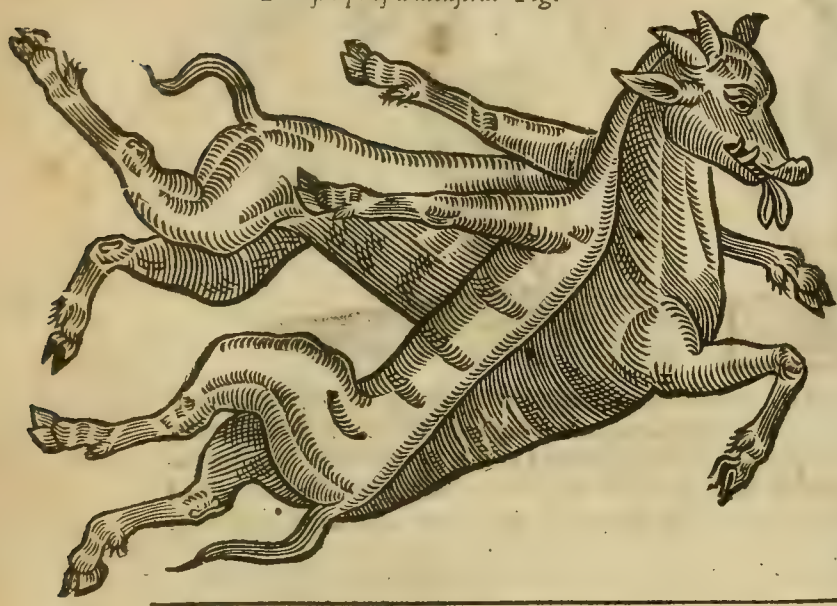
*The figure of a man out of whose bellie another head shewed it self.*

In the year that *Francis* the first King of *France* entered into league with the *Swisses*, there was born a monster in *Germanie*, out the midst of whose bellie there stood a great head; it came to man's age, and his lower, and as it were inserted head, was nourished as much as the true and upper head.

*The ſhape of two monſtrous Twins, beeing but of one onely Sex.*

In the year 1572. the laſt daie of *Februarie*, in the pariſh of *Vinban*, in the waie as you go from *Carnuta* to *Paris*, in a ſmall village called *Bordes* one called *Cypriana Giranda*, the wife of *James Merchant* a husbandman, brought forth this monſter whoſe ſhape you ſee here delineated, which lived until the Sundaie following, beeing but of one onely ſex, which was the female.

*The ſhape of a monſtrus Pig.*



In the year 1572. on Eaſter Mundaie at *Metz* in *Lorain*, in the Inn whoſe ſign is the Holie Ghoſt, a Sow pigped a pig, wch had eight legs, four ears, and the head of a dog; the hinder part from the bellie downward was parted in two as in twins, but the fore-parts grew into one; it had two tongues in the mouth, with four teeth in the upper jaw, and as manie in the lower. The ſex was not to bee diſtinguiſhed, whether it were a Bore or Sow pig, for there was one ſlit under the tail, and the hinder parts were all rent and open. The ſhape of this monſter, as it is here ſet down, was ſent mee by *Borgeſius* the famous Phyſician of *Metz*.

## CHAP. III.

*Of women bringing manie Children at one birth.*

WOman is a creature bringing uſually but one at a birth: but there have been ſom who who have brought forth two, ſom three, ſom four, ſom five, ſix, or more at one birth. *Empedocles* thought that the abundance of ſeed was the cauſ of ſuch numerous births: the *Stoïks* affirm the diverſ cells or partitions of the womb to bee the cauſ; for the ſeed beeing variouſly parted into theſe partitions, and the conception divided, there are more children brought forth; no otherwiſe then in rivers, the water beating againſt the rocks, is turned into divers circles or rounds. But *Ariſtotle* ſaith there is no reaſon to think ſo, for in women that parting of the womb into cells, as in dogs and ſows, taketh no place; for women's wombs have but one cavitie, parted into two receſſes, the right and left, nothing comming between, except by chance diſtinguiſhed by a certaine line; for often twins lie in the ſame ſide of the womb. *Ariſtotle*'s opinion is, that a woman cannot bring forth more then five children at one birth. The maid of *Auguſtus Ceſar* brought forth five at a birth, and, a ſhort while after, ſhe and her children died. In the year 1554. at *Bearn* in *Switzerland*, the wife of Dr. *John Gelenger* brought forth five children at one birth, three boies and two girls. *Albucraſis*, affirm's a woman to have been the mother of ſeven children at one birth; and another, who by ſom external injurie did abort, brought forth fifteen perfectly ſhaped in all their parts. *Plinie* report's that it was extant in the writeings of Phyſicians, that twelv children were born at one birth; and that there was another in *Peloponneſus* which four ſeveral times was delivered of five children at one birth, and that the greater part of thoſe children lived. It is reported by *Dalechampius* that *Bonaventura* the ſlave of one *Savil*, a gentleman of *Sena*, at one time brought forth ſeven children, of which four were baptized. In our time, between *Sarte* and *Main*, in the pariſh of *Seaux*, not far from *Chambellay*, there is a familie and noble houſ called *Maldemeure*; the wife of the Lord of *Maldemeure*, the firſt year ſhee was married brought forth twins, the ſecond year ſhee had three children, the third year four, the fourth year five, the fifth year ſix, and of that birth ſhee died: of thoſe ſix one is yet alive, and is Lord of *Maldemeure*. In the valley of *Beaufort*, in the countie of *Anjou*, a young woman the daughter of *Mace Channiere*, when at one perfect birth ſhee had brought forth one childe, the tenth daie following ſhee fell in labor of another, but could not bee delivered untill it was pulled from her by force, and was the death of the mother.

*4. De gen. anim. cap. 4.*

*Lib. 7. cap 11. Cap. 3.*

*Martin*

*The picture of* Dorothie, *great with childe with manie children.*

*Martin Cromerus* the autor of the Polish historie, writeth that one *Margaret*, a woman sprung from a noble and ancient familie neer *Cracovia*, and wife to Count *Virboslaus*, brought forth at one birth thirtie five live children, upon the twentieth daie of *Jan.* in the year 1296. *Franciscus Picus Mirandula* writeth that one *Dorothie* an Italian had twentie children at two births; at the first nine, and at the second eleven, and that shee was so big, that shee was forced to bear up her bellie, which laie upon her knees, with a broad and large scarf tied about her neck, as you may see by this figure.

The ninth Book of the Polish Historie.

And they are to bee reprehended here again, who affirm the cauſ of numerous births to consist in the varietie of the cels of the womb, for they feign a woman's womb to have seven cels or partitions; three on the right side for males, three on the left side for females, and one in the mid'st for Hermophrodites or Scrats: and this untruth hath gon so far, that there have been som that affirmed everie of these seven cels to have been divided into ten partitions, into which the seed disperſed, doth bring forth a divers and numerous encreaſ, according to the varietie of cels furnished with the matter of seed; which, though it may seem to have been the opinion of *Hippocrates*, in his Book *De natura Pueri*, notwithstanding it is repugnant to reason, and to those things which are manifestly apparent to the eies and senses.

The opinion of *Aristotle* is more probable, who saith twins and more at one birth, are begot and brought forth by the same cauſ that the sixth finger groweth on the hand, that is, by the abundant plentie of the seed, which is greater and more copious then can bee all taken up in the natural framing of one bodie; for if it all bee forced into one, it maketh one with the parts encreased more then is fit, either in greatness or number; but if it bee, as it were, cloven into divers parts, it causeth more then one at one birth.

*Lib. 4. de gen. anim. cap. 4.*

## CHAP. IV.

### *Of Hermophrodites, or Scrats.*

AND here also wee must speak of Hermophrodites, becauſ they draw the cauſ of their generation and conformation from the abundance of seed, and are called so, becauſ they are of both sexes, the woman yeelding as much seed as the man. For hereupon it commeth to pass that the forming facultie (which alwaies endeavor's to produce somthing like it self) doth labor both the matters almost with equal force, and is the cauſ that one bodie is of both sexes.

Yet som make four differences of Hermophrodites; the first of which is the male Hermophrodite, who is a perfect and absolute male, and hath onely a slit in the *Perinæum* not perforated, and from which neither urine nor seed doth flow. The second is the female, which besides her natural privitie, hath a fleshie and skinnie similitude of a man's yard, but unapt for erection and ejaculation of seed, and wanteth the cod and stones; the third difference is of those, which albeit they bear the expreſs figures of members belonging to both sexes, commonly set the one against the other, yet are found unapt for generation, the one of them onely serving for makeing of water: the fourth difference is of those who are

able in both sexes, and throughly perform the part of both man and woman, becaus they have the genitals of both sexes complete and perfect, and also the right brest like a man, and the left like a woman: the laws command those to chuse the sex which they will use, and in which they will remain and live, judging them to death if they bee found to have departed from the sex they made choice of, for som are thought to have abused both, and promiscuously to have had their pleasure with men and women. There are signs by which the Physicians may discern whether the Hermophrodites are able in the male or female sex, or whether they are impotent in both: these signs are most apparent in the privities and face; for if the matrix bee exact in all it's demensions, and so perforated that it may admit a man's yard, if the courses flow that waie, if the hair of the head bee long, slender and soft, and to conclude, if to this tender habite of the bodie a timid and weak condition of the minde bee added, the female sex is predominant, and they are plainly to bee judged women. But if they have the *Perinæum* and fundament full of hairs, (the which in women are commonly without anie) if they have a yard of a convenient largeness, if it stand well and readily, and yeeld seed, the male sex hath the preheminence, and they are to bee judged men. But if the conformation of both the genitals bee alike in figure, quantitie, and efficacie, it is thought to bee equally able in both sexes: although by the opinion of *Aristotle*, those who have double genitals, the one of the male, the other of the female, the one of them is alwaies perfect, the other imperfect.

*Lib. 4 de gener. anim. cap. 5.*

*The figure of Hermophrodite twins cleaving together with their backs.*

*Anno Dom.* 1486. In the *Palatinate*, at the village *Robach*, neer *Heidelberg*, there were twins, both Hermophrodites, born with their backs sticking together.

*The effigies of an Hermophrodite haveing four hands and feet.*

The same day the *Venetians* and *Genoëses* entred into league, there was a monster born in *Italie* haveing four arms and feet, and but one head; it lived a little after it was baptized. *James Ruef* a *Helvetian* Chirurgian saith hee saw the like, but which besides had the privities of both sexes, whose figure I have therefore set forth, *Pag.* 653.

## CHAP. V.

### *Of the changeing of Sex.*

*Amatus Lusitanus* report's that in the village *Esquina*, there was a maid named *Maria Pateca*, who at the appointed age for her courses to flow, had in stead of them a man's yard, laying before that time hid and covered, so that of a woman shee became a man, and therefore laying aside her woman's habite, was cloathed in man's, and changeing her name, was called *Emanuël*; who, when hee had got much wealth by manie and great negotiations and commerce in *India*, returned into his countrie, and married a wife: but *Lusitanus* saith hee did not certainly know whether hee had anie children, but that hee was certain he remained alwaies beardless.

*Anthonie Loqueneux*, the King's keeper or receiver of his rents of St. *Quintain* at *Vermandois*, lately affirmed to mee that hee saw a man at *Reimes*, at the Inn haveing the sign of the Swan, in

in the year 1560. who was taken for a woman untill the fourteenth year of his age; for then it happened as he played somwhat wantonly with a maid which laie in the same bed with him, his members (hitherto lying hid) started forth and unfolded themselvs: which when his parents knew (by help of the Ecclesiastick power) they changed his name from *Joan* to *John*, and put him in man's apparel.

Som years agon, beeing in the train of King *Charls* the Ninth, in the French Glass-hous, I was shewed a man called *Germane Garnierus*, but by som *Germane Maria* (becaus in former times when hee was a woman hee was called *Marie*) hee was of an indifferent stature, and well set bodie, with a thick and red beard; hee was taken for a girl until the fifteenth year of his age, becaus there was no sign of beeing a man seen in his bodie, and for that amongst women, hee in like attire did those things which pertain to women: in the fifteenth year of his age, whilest hee somwhat earnestly pursued hogs given into his charge to bee kept, who running into the corn, hee leaped violently over a ditch, whereby it came to pass that the staies and foldings beeing broken, his hidden members suddenly broke forth, but not without pain; going home, hee weeping complained to his mother that his guts came forth: with which his mother amazed, calling Physicians and Surgeons to counsel, heard hee was turned into a man; therefore the whole business beeing brought to the Cardinal the Bishop of *Lenuncure*, an assemblie beeing called, hee received the name and habite of a man.

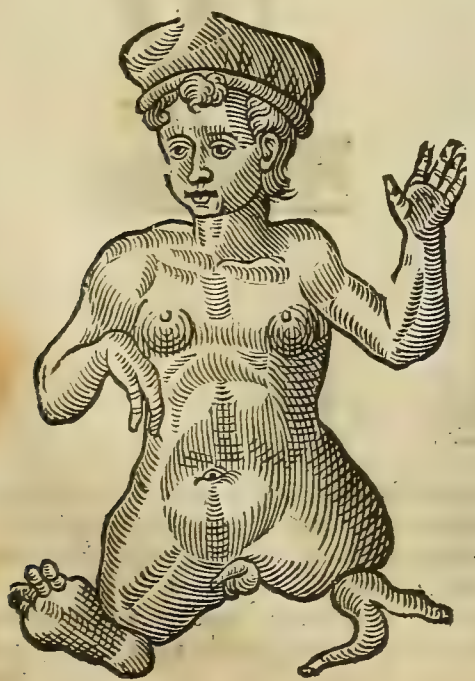
*Plinie* report's that the son of *Cassinus* of a girl became a boy, liveing with his parents; but by the command of the Sooth-saiers hee was carried into a desert Isle, becaus they thought such monsters did alwaies shew or portend som monstrous thing. Certainly women have so manie and like parts lying in their womb, as men have hanging forth; onely a strong and livelie heat seem's to bee wanting, which may drive forth that which lie's hid within: therefore in process of time, the heat beeing increased and flourishing, and the humiditie (which is predominant in childe-hood) overcom, it is not impossible that the virile members, which hitherto sluggish by defect of heat, lay hid, may bee put forth; especially if to that strength of the growing heat som vehement concussion or jactation of the bodie bee joined. Therefore I think it manifest by these experiments and reasons, that it is not fabulous that som women have been changed into men: but you shall finde, in no historie men, that have degenerated into women; for nature alwaies intend's and goe's from the imperfect to the more perfect, but not basely from the more perfect to the imperfect.

## CHAP. VI.

### *Of Monsters caused by the defect of Seed.*

IF, on the contrarie, the seed bee anie thing deficient in quantitie, for the conformation of the infant or infants, som one or more members will bee wanting, or more short and decrepite. Hereupon it happen's that nature intending twins, a childe is born with two heads, and but one arm, or altogether lame in the rest of his limbs.

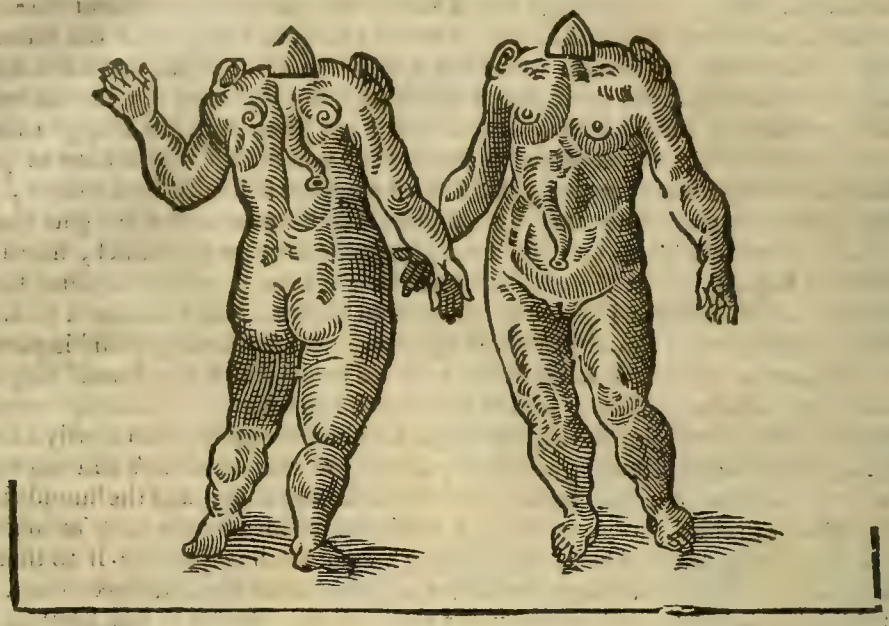
*The effigies of a monstrous childe, by reason of the defect of the matter of seed.*



*Anno Dom.* 1573. I saw at Saint *Andrew's* Church in *Paris*, a boy nine years old, born in the village *Parpavilla*, six miles from *Guise*; his father's name was *Peter Renard*, and his mother, *Marquete*: hee had but two fingers on his right hand, his arm was well proportioned from the top of his shoulder almost to his wrist, but from thence to his two finger's ends it was verie deformed, hee wanted his legs and thighs, although from the right buttock a certain unperfect figure, haveing onely four toes, seemed to put it self forth; from the midst of the left buttock two toes sprung out, the one of which was not much unlike a man's yard, as you may see by the figure.

In the year 1562 in the Calends of November, at *Villa franca* in *Gasconie*, this monster, a headless woman, whose figure thou here see'st, was born, which figure Dr. *John Altinus* the Physician gave to mee, when I went about this book of Monsters, hee haveing received it from *Fontanus* the Physician of *Angolestre*, who seriously affirmed hee saw it.

*The figure of a monstrous woman without a head, before and behinde.*



*The effigies of a man without arms, doing all that is usually don with hands.*

*The effigies of a monster with two heads, two legs, and but one arm.*

A few years agon there was a man of fortie years old to bee seen at *Paris*, who although hee wanted his arms, notwithstanding did indifferently perform all those things which are usually don with the hands; for with the top of his shoulder, head and neck, hee would strike an Axe or Hatchet with as sure and strong a blow into a post, as anie other man could do with his hand: and hee would lash a Coach-man's whip, that hee would make it give a great crack, by the strong refraction of the air; but hee ate, drank, plai'd at cards, and such

such like, with his feet. But at last hee was taken for a thief and murderer, was hanged, and fastened to a wheel.

Also not long ago there was a woman at *Paris* without arms, which nevertheless did cut, sew, and do many other things, as if shee had her hands.

Wee read in *Hippocrates*, that *Attagenis* his wife brought forth a childe all of flesh without anie bone, and notwithstanding it had all the parts well formed.

## CHAP. VII.

*Of Monsters, which take their cause and shape by imagination.*

THe Antients haveing diligently sought into all the secrets of nature, have marked and observed other causses of the generation of Monsters: for, understanding the force of imagination to bee so powerful in us, as for the most part, it may alter the bodie of them that imagine, they soon perswaded themselvs that the faculties which formeth the infant may bee led and governed by the firm and strong cogitation of the Parents begetting them (often deluded by nocturnal and deceitful apparitions) or by the mother conceiving them; and so that which is strongly conceived in the minde, imprint's the force into the infant conceived in the womb: which thing manie think to bee confirmed by *Moses*, becaus hee tell's that *Jacob* encreased and bettered the part of the sheep granted to him by *Laban*, his wive's father, by putting rods, haveing the bark in part pulled off, finely streaked with white and green, in the places where they used to drink, especially at the time they engendred, that the representation apprehended in the conception, should bee presently impressed in the young; for the force of imagination hath so much power over the infant, that it set's upon it the notes or characters of the thing conceived. *The force of imagination upon the bodie and humors.* *Gen. chap. 30.*

Wee have read in *Heliodorus*, that *Persina* Queen of *Æthiopia*, by her husband *Hidustes*, beeing also an Ethiope, had a daughter of a white complexion; becaus in the embraces of her husband, by which shee proved with childe, shee earnestly fixed her eie and minde upon the picture of the fair *Andromeda* standing opposite to her. *Damascene* report's, that hee saw a maid hairie like a Bear, which had that deformitie by no other caus or occasion then that her mother earnestly beheld, in the verie instant of receiving and conceiving the seed, the image of S. *John* covered with a Camel's skin, hanging upon the posts of the bed.

They say, *Hippocrates* by this explication of the causses, free'd a certain noble woman from suspition of adulterie, who beeing white her self, and her husband also white, brought forth a childe as black as an Ethiopian, becaus in copulation shee strongly and continually had in her minde the picture of the Ethiope.

*The effigies of a maid all hairie, and an infant that was black by the imagination of their Parents.*

There

There are ſom who think the infant once formed in the womb, which is don at the utmoſt within two and fortie daies after the conception, is in no danger of the mother's imagination, neither of the ſeed of the father which is caſt into the womb; becauſ when it hath got a perfect figure, it cannot bee altered with anie external form of things; which whether it bee true, or no, is not here to bee inquired of: truly I think it beſt to keep the woman, all the time ſhee goeth with childe, from the ſight of ſuch ſhapes and figures.

In *Stecquer* a village of *Saxonie*, they ſay, a monſter was born, with four feet, eies, mouth, and noſe like a calf, with a round and red excreſcence of fleſh on the forehead, and alſo a piece of fleſh like a hood hung from his neck upon his back, and it was deformed with its thighs torn and cut.

*The effigies of a horrid Monſter, haveing feet hands and other parts like a Calf.*

*The figure of an infant with a face like a Frog.*

*Anno Dom.* 1517. in the pariſh Kingſ-wood, in the forreſt *Biera*, in the waie to *Fontaiu-Bleau*, there was a monſter born, with the face of a Frog, beeing ſeen by *John Bellanger*, Chirurgian to the King's Engineers, before the Juſtices of the town of *Harmoy*, principally *John Bribon* the King's procurator in that place. The father's name was *Amadæus* the *Little*, his mother's *Magdalene Sarbucata*, who troubled with a fever, by a woman's perſwaſion, held a quick frog in her hand until it died, ſhee came thus to bed with her husband and conceived; *Bellanger*, a man of an acute wit, thought this was the cauſ of the monſtrous deformitie of the childe.

## CHA VIII.

### *Of Monſters cauſſed by the ſtraitneſs of the womb.*

That the ſtaaitneſs or littleneſs of the womb may bee the occaſion of monſters

WE Eare conſtrained to confeſs by the event of things, that monſters are bred and cauſſed by the ſtraitneſs of the womb; for ſo apples growing upon the trees, if before they com to juſt ripeneſs, they bee put into ſtrait veſſels, their growth is hindred. So ſom whelps which women take delight in, are hindred from anie further growth by the littleneſs of the place in which they are kept. Who know's not that the plants growing in the earth, are hindred from a longer progreſs and propagation of their roots, by the oppoſition of a flint, or anie other ſolid bodie, and therefore in ſuch places are crooked, ſlender and weak, but on the other part, where they have free nouriſhment, to bee ſtrait and ſtrong? for ſeeing that by the opinion of Naturaliſts, the place is the form of the thing placed; it is neceſſarie that thoſe things that are ſhut up in ſtraiter ſpaces, prohibited of free motion, ſhould be leſſened, depraved, and lamed.

*Empedocles* and *Diphilus* acknowledged three cauſſes of monſtrous births: The too great or ſmall matter of the ſeed; the corruption of the ſeed; and depravation of growth by the ſtraitneſs or figure of the womb: which they thought the chiefeſt of all; becauſ they thought

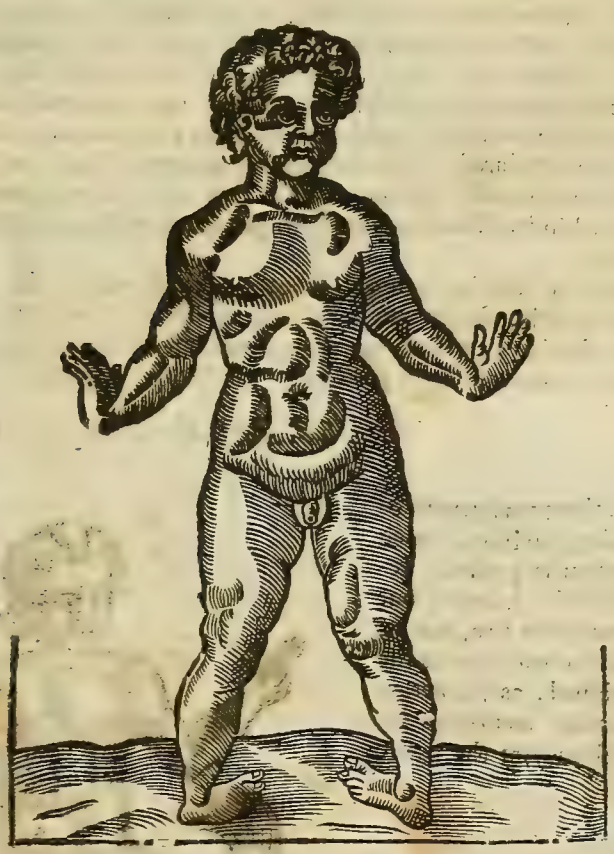
thought the case was such in natural births, as in forming of metals and fusible things, of which statues beeing made, do less express the things they bee made for, if the molds or forms into which the matter is poured, bee rough, scabrous, too strait, or otherwise faultie.

## CHAP. IX.

*Of monsters caussed by the ill placeing of the mother, in sitting, lying down, or anie other site of the bodie in the time of her beeing with childe.*

WEE often too negligently and carelesly corrupt the benefits and corporal endowments of nature in the comlines and dignitie of conformation: it is a thing to bee lamented and pitied in all, but especially in women with childe, becaus that fault doth not only hurt the mother, but deform's and pervert's the infant which is contained in her womb: for wee mooving anie manner of waie, must necessarily moov whatsoever is within us. Therefore they which sit idlely at home all the time of their beeing with childe, or cross-legged, those which holding their heads down, do sow or work with the needle, or do any other labor, which press the bellie too hard with cloaths, breeches or swathes, do produce children wrie-necked, stooping, crooked, and disfigured in their feet, hands, and the rest of their joints, as you may see in the following figure.

*The effigies of a childe, who from the first conception, by the site of the mother, had his hands and feet standing crooked.*



## CHAP. X.

*Of monsters caussed by a stroke, fall, or the like occasion.*

THere is no doubt but if anie injurie happen to a woman with childe, by reason of a stroke, fall from on high, or the like occasion, the hurt also may extend to the childe. Therefore by these occasions the tender bones may bee broken, wrested, strained, or depraved after som other monstrous manner; and more, by the like violence of such things, a vein is often opened or broken, or a flux of bloud, or great vomiting is caussed by the vehement concussion of the whole bodie, by which means the childe want's nourishment, and therefore will bee small and little, and altogether monstrous.

CHAP.

## CHAP. XI.

*Of Monsters which have their original by reason of hereditarie diseases.*

BY the injurie of hereditarie diseases, infants grow monstrous, that is, monstrously deformed: for crook't-back't produce crook-back't, and often-times so crooked, that between the bunch behinde and before, the head lie's hid, as a Tortoise in her shell: so lame produce lame, flat-nos'd their like, dwarfs bring forth dwarfs, lean bring forth lean, and fat produce fat.

## CHAP. XII.

*Of Monsters by the confusion of seed of divers kindes.*

THat which followeth is a horrid thing to bee spoken; but the chaste minde of the Reader will give mee pardon, and conceive that, which not onely the Stoïcks, but all Philosophers, who are busied about the search of the causses of things, must hold, That there is nothing obscene or filthie to bee spoken. Those things that are accounted obscene may bee spoken without blame, but they cannot bee acted or perpetrated without great wickednes, furie and madnes; therefore that ill which in obscuritie consist's not in word, but wholly in the act. Therefore in times past there have been som, who nothing fearing the Deitie, neither the Law, nor themselvs, that is, their soul, have so abjected and prostrated themselvs, that they have thought themselvs nothing different from beasts: wherefore Atheists, Sodomites, Out-laws, forgetful of their own excellencie and divinitie, and transformed by filthie lust, have not doubted to have filthie and abominable copulation with beasts. This so great, so horrid a crime, for whose expiation all the fires in the world are not sufficient, though too maliciously craftie, have concealed, and the conscious beasts could not utter, yet the generated mis-shapen issue hath abundantly spoken and declared, by the unspeakable power of God, the revenger and punisher of such impious and horrible actions. For of this various and promiscuous confusion of seeds of a different kinde, Monsters have been generated and born, who have been partly men, and partly beasts.

The like deformitie of issue is produced, if beasts of a different species do copulate together, nature alwaies affecting to generate somthing which may bee like it self: for wheat grow's not but by sowing of wheat, nor an apricock but by the setting or grafting of an apricock; for nature is a most diligent preserver of the species of things.

*The effigies of a Monster half man and half dog.*

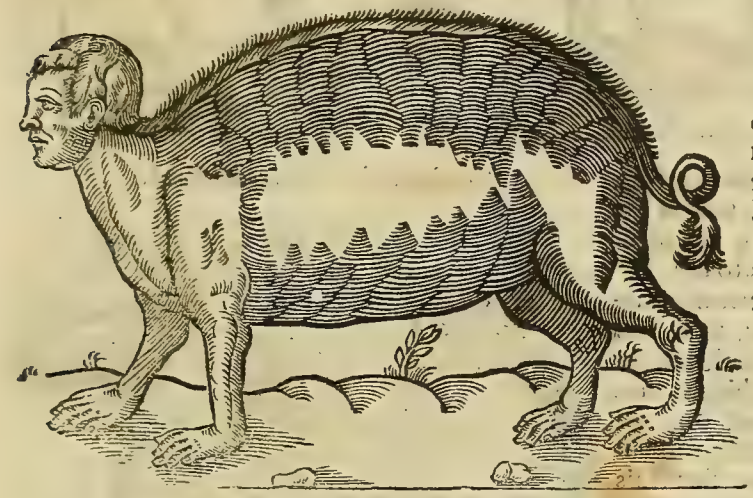
*Anno Dom.* 1493. there was generated of a woman and a dog, an issue, which from the navel upwards perfectly resembled the shape of the mother, but therehence downwards the fire, that is, the dog. This monster was sent to the Pope that then reigned, as *Volaterane* writeth: also *Cardane* mention's it; wherefore I have given you the figure thereof.

*Cardan. lib. 14. de var. rerum cap. 94.*

*The figure of a Monster in face resembling a man, but a Goat in his other members.*

*Cælius Rhodoginus* write's that at *Sibaris*, a heardsman called *Chrathis* fell in love with a Goat, and accompanied with her, and of this detestable and brutish copulation an infant was born, which in legs resembled the dam, but the face was like the father's.

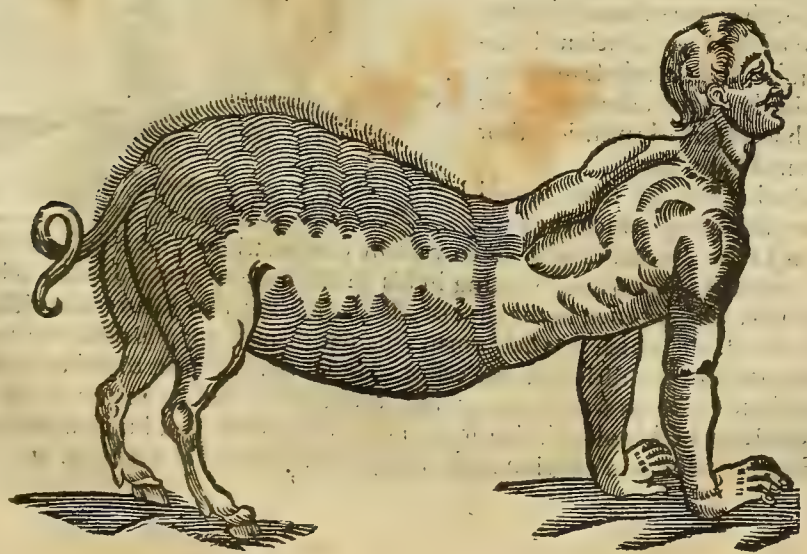
*The figure of a pig, with the head, face, hands, and feet of a man.*



*Anno Dom.* 1110. In a certain town of *Liege* (as saith *Lycosthenes*) a Sow farrowed a pig with the head, face, hands, and feet of a man, but in the rest of the bodie resembling a swine.

*Anno Dom.* 1564. at *Bruxels*, at the house of one *Joest Dirtzpeert*, in the street *Warmoesbroects*, a Sow farrowed six pigs, the first whereof was a monster representing a man in the head, face, fore-feet and shoulders, but in the rest of the bodie another pig, for it had the genitals of a sow-pig, and it sucked like other pigs. But the second daie after it was farrowed, it was killed of the people together with the sow, by reason of the monstrousnes of the thing. Here followeth the figure thereof.

*The effigies of a Monster half man and half swine.*



*An-*

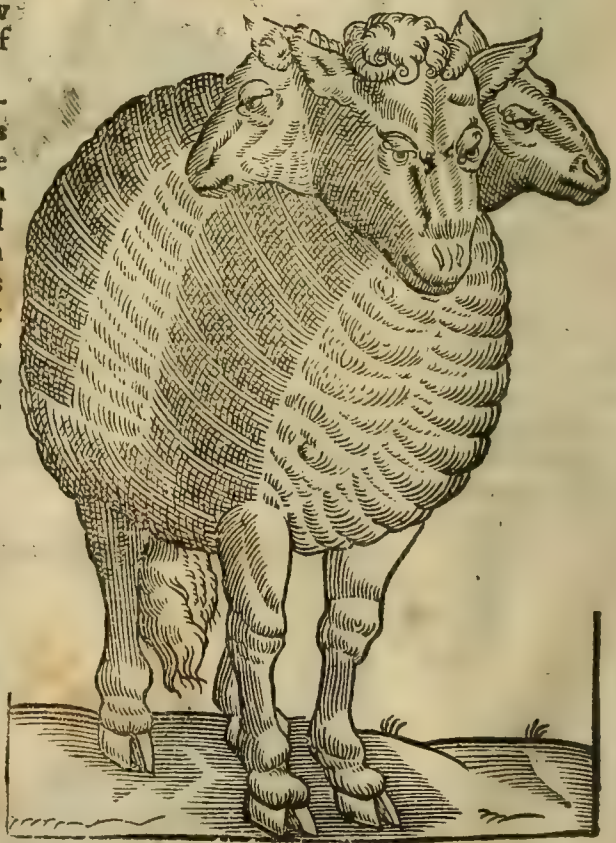
*Anno Dom.* 1571. at *Antwerp*, the wife of one *Michaël* a Printer dwelling with one *John Molline* a Graver or Carver, at the ſign of the Golden Foot, in the *Camiſtrate*, on St. *Thomas* his daie, at ten of the clock in the morning, brought forth a monſter wholly like a dog, but that it had a ſhorter neck, and the head of a bird, but without anie fethers on it. This monſter was not alive, for that the mother was delivered before her time; but ſhee giveing a great ſcritch in the inſtant of her deliverance, the chimnie of the houſ fell down, yet hurt no bodie, no not ſo much as anie one of four little children that ſate by the fire-ſide.

*The figure of a monſter like a dog, but with a head like a bird.*

*Lewis Gellius* writeth that hee hath read in an approved autor, that an Ew once brought forth a Lion, a beaſt of an unlike and adverſ nature to her.

*Anno Dom.* 1577. in the town *Blandie*, three miles from *Melon*, there was lambed a Lamb, haveing three heads, the middlemoſt of which was bigger then the reſt, when one bleated they all bleated. *John Bellanger* the Chirurgian of *Melon* affirmed that hee ſaw this monſter, and hee got it drawn, and ſent the figure thereof to mee with that humane monſter that had the head of a Frog, which wee have formerly deſcribed.

*The figure of a three-headed Lamb.*



There are ſom monſters in whoſe generation by this there may ſeem to bee ſom divine cauſ, for that their beginnings cannot bee derived or drawn from the general cauſ of monſters, that is, nature, or the errors thereof, by reaſon of ſom of the fore-mentioned particular cauſſes: ſuch are theſe monſters that are wholly again all nature, like that which wee formerly mentioned, of a Lion yeaned by an Ew.

Yet Aſtrologers (leſt there ſhould ſeem to bee anie thing which they are ignorant of) refer the cauſſes of theſe to certain conſtellations and aſpects of the Planets and Stars, according to *Ariſtotle's* ſaying in his Problems; in confirmation whereof they tell us this tale. It happened in the time of *Albertus Magnus*, that in a certain village, a Cow brought forth a Calf, which was half a man: the townſ-men apprehended the heardſ-man, and condemned him as guiltie of ſuch a crime, to bee preſently burnt together with the Cow; but by good luck *Albertus* was there, to whom they gave credit by reaſon of his much and certain experience in Aſtrologie, that it was no occaſioned by anie humane wickedneſs, but by the efficacie of a certain poſition of the ſtars, that this monſter was born.

CHAP.

## CHAP. XIII.

*Of monsters occasioned by the craft and subtiltie of the Devil.*

IN treating of such monsters as are occasioned by the craft of the Devil, wee crave pardon of the courteous Reader, if peradventure going further from our purpose, wee may seem to speak more freely and largely of the existence, nature, & kindes of Devils. Therefore first it is manifest that there are Conjurers, Charmers, and Witches, which whatsoever they do, perform it by an agreement and compact with the Devil, to whom they have addicted themselvs: for none can bee admitted into that societie of Witches, who hath not forsaken God the Creator, and his Saviour, and hath not transferred the worship due to him above, upon the Devil, to whom hee hath obliged himself. And assuredly, whosoever addict's himself to these Magical vanities and witch-crafts, doth it, either becaus hee doubt's of God's power, promises, studie and great good will towards us: or elsfor that hee is madded with an earnest desire of knowing things to com; or elsbecaus disdaining povertie, hee affect's and desire's from a poor estate to becom rich on the sudden. It is the constant opinion of all, both antient and modern, as well Philosophers as Divines, that there are som such men; which when they have once addicted themselvs to impious and diveliſh Arts, can by the wondrous craft of the Divel, do manie strange things, and change and corrupt bodies, and the health and life of them, and the condition of all mundane things. Also experience forceth us to confess the same, for punishments are ordained by the laws against the professors and practisers of such Arts; but there are no laws again those things which neither ever have been, nor never came into the knowledg of men: for such things are rightly judged and accounted for impossibilities, which have never been seen nor heard of.

There are forcerers, and how they com so to bee.

What induceth them thereto.

Before the birth of Christ there have been manie such people, for you may finde in *Exodus* and *Leviticus* laws made against such persons by *Moses*, by whom God gave the Law to his people. The Lord gave the sentence of death to *Ochawas* by his Prophet, for that hee turned into these kinde of people. Wee are taught by the Scriptures that there are good and evil spirits, and that the former are termed Angels, but the later Devils; for the law is also said to bee given by the ministrie of Angels: and it is said that our bodies shall rise again at the sound of a trumpet, and the voice of an Arch-angel. Christ said that God would send his Angels to receiv the Elect into the heavens.

*Exod.cap.22.*
*Levit.cap.19.*
*Hebr.1.14.*
*Gal.3.19.*
*1 Thes.4.16.*

The historie of *Job* testifieth ehat the Devil sent fire from heaven, and killed his sheep and cattel, and raised windes that shook the four corners of the hous, and overwhelmed his children in the ruines thereof. The historie of *Achab* mentioneth a certain lying spirit in the mouth of the fals Prophets. Sathan entring into *Judas*, moved him to betraie Christ. Devils, who in a great number possessed the bodie of a man, were called and obtained of Christ that they might enter into Swine, whom they carried headlong into the Sea.

*Joh.13.*
*Mar.26.34.*

In the beginning God creäted a great number of Angels, that those divine and incorporeal spirits might inhabit heaven, and as messengers, signifie God's pleasure to men, and as ministers or servants, perform his commands, who might bee as over-seers & protectors of humane affairs. Yet of this great number there were som who were blinded by pride, and thereby also cast down from the presence, and heavenlie habitation of God the Creator. These harmful and craftie spirits delude men's mindes by divers jugling tricks, and are alwaies contriving somthing to our harm, and would in a short space destroie mankinde, but that God restrain's their furie; for they can onely do so much as is permitted them: Expelled heaven, som of them inhabit the air; others, the bowels of the earth; there to remain until God shall com to judg the world: and as you see the clouds in the air somwhiles to resemble centaures, otherwhiles serpents, rocks, towers, men, birds, fishes, and other shapes: so these spirits turn themselvs into all the shapes and wondrous forms of things; as oft-times into wildebeasts, into serpents, toads, owls, lapwings, crows or ravens, goats, asses, dogs, cats, wolvs, buls, and the like. Moreover, they oft-times assume and enter humane bodies, as well dead as alive, whom they torment and punish, yea also they transform themselvs into angels of light.

The power of evil spirits over mankinde.

The differences of devils.

They feign themselvs to bee shut up and forced by Magical rings, but that is onely their deceit and craft, they wish, fear, love, hate, and oft-times as by the appointment and decree of God they punish malefactors: for wee read that God sent evil angels into Egypt, there to destroie. They houl on the night, they murmure and rattle, as if they were bound in chains, they move benches, tables, counters, props, cupboards, children in the cradles, plaie at tables and chess, turn over books, tell monie, walk up and down rooms and are heard to laugh, to open windows and doores, cast sounding vessels, as brass and the like, upon the ground, break stone-pots & glasses, & make other the like noises. Yet none of all these things appear to us when as we arise in the morning, neither find we anie thing out of its place or broken.

The delusions of devils.

Their titles and names.

They are called by divers names, as Devils, evil Spirits, *Incubi*, *Succubi*, Hobgoblins, Fairies, Robin-good-fellows, evil-Angels, Sathan, Lucifer, the father of lies, Prince of darkness and of the world, Legion, and other names agreeable to their offices and natures.

## CHAP. XIV.

*Of the subterrene Devils, and such as haunt Mines.*

What the Devils in Mines do.

*Lewis Lavater* write's, that by the certain report of such as work in Mines, that in som Mines there are seen spirits, who in the shape and habit of men, work there, and running up and down seem to do much work, when as notwithstanding they do nothing indeed. But in the mean time they hurt none of the by-standers, unless they bee provoked thereto by words, or laughter. For then they will throw som heavie or hard thing upon him that hurt them, or injure them som other waie.

The same autor affirm's that there is a silver Mine in *Rhetia*, out of which *Peter Briot*, the Governor of the place, did in his time get much silver. In this Mine there was a Devil, who chiefly on Fridaie, when as the Miners put the Mineral they had digged into tubs, kept a great quarter, and made himself exceeding busie, and poured the Mineral as hee listed, out of one tub into another. It happened one daie that hee was more busie then it used to bee, so that one of the Miners reviled him, and bad him bee gone on a vengeance to the punishment appointed for him. The Devil offended with his imprecation and scoff, so wrested the Miner, takeing him by the head, twineing his neck about, hee set his face behinde him, yet was not the workman killed therewith, but lived, and was known by divers for manie years after.

## CHAP. XV.

*By what means the Devils may deceiv us.*

Devils are spirits, and from eternitie.

OUr mindes involved in the earthie habitation of our bodies, may bee deluded by the Devils divers waies; for they excel in puritie and subtiltie of essence, and in the much use of things: besides, they challenge a great preheminence, as the Princes of this world, over all sublunarie bodies. Wherefore is is no marvel if they, the taachers and parents of lies, should cast clouds and mists before our eies from the beginning, and turn themselvs into a thousand shapes of things and bodies, that by these juglings and tricks they may shadow and darken men's mindes.

## CHAP. XVI.

*Of* Sucubi *and* Incubi.

The reason of the name. *Lib. 15. de civit. Dei, cap. 22. & 23.*

POwerful by these fore-mentioned arts and deceits, they have sundrie times accompanied with men in copulation, whereupon such as have had to do with men were called *Sucubi*, those which made use of women, *Incubi*. Verily St. *Augustine* seemeth not to bee altogether against it, but that they, takeing upon them the shape of man, may fill the genitals, as by the help of nature, to the end that by this means they may draw aside the unwarie, by the flames of lust, from virtue and chastitie.

An historie.

*John Ruef* in his book of the conception and generation of man, write's that in his time, a certain woman of monstrous lust, and wondrous impudencie, had to do by night with a Divel, that turned himself into a man, and that her bellie swelled up presently after the act; and when as shee thought shee was with childe, shee fell into so grievous a disease, that shee voided all her entrails by stool, medicines nothing at all prevailing.

Another.

The like historie is told of the servant of a certain Butcher, who thinking too attentively on venereous matters, a Devil appeared to him in the shape of a woman, with whom (supposing it to bee a woman) when as hee had to do, his genitals so burned after the act, that becomming enflamed hee died with a great deal of torment.

An opinion confuted.

Neither doth *Peter Paludanus*, and *Martin Arelatensis* think it absurd to affirm that Devils may beget children, if they shall ejaculate into the woman's womb seed taken from som man either dead or alive. Yet this opinion is most absurd and full of falsitie, man's seed consisting of a seminal or sanguineous matter, and much spirit: if it run otherwaies then into the womb from the testicles, and staie never so little a while, it loseth it strength and efficacie, the heat and spirits vanishing away; for even the too great length of a man's yard, is reckoned amongst the causes of barrenness, by reason that the seed is cooled by the length of the waie. If anie in copulation, after the ejaculation of the seed, presently draw themselvs from the woman's embraces, they are thought not to generate, by reason of the air entring into

into the yet open womb, which is thought to corrupt the seed. By which it appear's how falsf that historie in *Averrois* is, of a certain woman that said shee conceived with childe by a man's seed shed in a bath, and so drawn into her womb, shee entring the bath presently after his departure forth. It is much less credible that Divels can copulate with women, for they are of an absolute spirituous nature, but bloud and flesh are necessarie for the generation of man. What natural reason can allow that the incorporeal Devils can love corporeal women? And how can wee think that they can generate, who want the instruments of generation? How can they who neither eat nor drink bee said to swel with seed? Now where the propagation of the species is not necessarie to bee supplied by the succession of individuals, Nature hath given no desire of venerie, neither hath it imparted the use of generation; but the devils once created were made immortal by God's appointment: If the facultie of generation should bee granted to devils, long since all places had been full of them. Wherefore if at anie time women with childe by the familiaritie of the devil, seem to travel, we must think it happen's by those arts wee mentioned in the former chapter, to wit, they use to stuff up the bodies of living women with old clouts, bones, pieces of iron, thorns, twisted hairs, pieces of wood, serpents, and a world of such trumperie, wholly dissenting from a womans nature: who afterwards, the time, as it were, of their deliverie drawing nigh, through the womb of her that was falsly judged with childe, before the blinded, and, as it were, bound up eies of the by-standing women, they give vent to their impostures. The following historie, recorded in the writings of manie most credible authors, may give credit hereto.

*Averrois* his historie convict of falshood.

The illusions of the devil,

There was at *Constance* a fair damosel called *Margaret*, who served a wealthie Citizen: shee gave it out everie where that shee was with childe by lying with the devil on a certain night. Wherefore the Magistrates thought it fit shee should bee kept in prison, that it might bee apparent both to them and others, what the end of this exploit would bee. The time of deliverance approching, shee felt pains like those which women endure in travel; at length, after manie throws, by the midwive's help, in stead of a childe, shee brought forth iron nails, pieces of wood, of glass, bones, stones, hairs, tow, and the like things, as much different from each other, as from the nature of her that brought them forth, and which were formerly thrust in by the devil to delude the too credulous minds of men.

A historie.

The Church acknowledgeth that devils, by the permission and appointment of God punishing our wickedness, may abuse a certain shape, so to use copulation with mankinde. But that an humane birth may thence arise, it not onely affirm's to bee falsf, but detest's as impious, as which believ's that there was never anie man begot without the seed of man, our Saviour Christ excepted. Now what confusion and perturbation of creatures should possess this world (as *Cassianus* saith) if devils could conceiv by copulation with men? or if women should proov with childe by accompanying them, how manie monsters would the devils have brought forth from the beginning of the world? how manie prodigies by casting their seed into the wombs of wilde and bruit beasts? for by the opinion of Philosophers, as often as facultie and will concur, the effect must necessarily follow: now the devils never have wanted will to disturb mankinde, and the order of this world: for the devil, as they say, is our enemie from the beginning; and as God is the autor of order, and beautie, so the devil, by pride, contrarie to God, is the causser of confusion and wickedness.

Our sins are the cauf that the devils abuse us.

Wherefore if power should accrew equall to his evil minde and nature, and his infinite desire of mischief and envie, who can doubt but a great confusion of all things and species, and also great deformitie would invade the decent and comlie order of this univers, monsters arising on everie side: But seeing that devils are incorporeal, what reason can induce us to believ that they can bee delighted with venereous actions: and what will can there bee where as there is no delight, nor anie decaie of the species to bee feared? seeing that by God's appointment they are immortal, so to remain for ever in punishment: so what need they succession of individuals by generation? wherefore if they neither will nor can, it is a madness to think that they do commix with man.

## CHAP. XVII.

### *Of Magick and supernatural diseases and remedies.*

THat I may refresh the minde of the Reader, invited to these histories of monsters raised up by the art of the devil, witches, and conjurers, his servants, I have thought good to add the following historie of certain diseases, and remedies supernatural, and vvholly magical out of *Fernelius*. There are diseases, vvhich as they are sent amongst men by God beeing offended, so they cannot expect cure othervvise then from God, from vvhence they are thought supernaturally to have their essence and cure. Thus the air oft-times, yet chiefly in the time of King *David*, being defiled vvith the pestilence, killed sixtie odd thousand persons.

*Lib. 2. de abdit. caus. cap. 16.*

Thus *Ezechias* was struck vvith a grievous disease: *Job* vvas defiled vvith filthie ulcers by Sathan at God's command. And as the Devil, the cruel enemie of mankinde, commonly

Witches hurt by the devil's assistance.

useth by God's permission to afflict those, so wicked persons by the wondrous subtiltie of the devil, offer violence and do harm to manie. Som invoke I know not what spirits, and adjure them with herbs, exorcisms, imprecations, incantations, charms: others hang about their necks, or otherwise carrie certain writings, characters, rings, images, and other such impious stuff. Som use songs, sounds or numbers: somtimes potions, perfumes, and smels; somtimes gestures and jugling. There bee som that make the portraiture of the absent partiein wax, and boast that they can cause or bring a disease into what soever part thereof they prick, by the force of their words and stars, into the like part of the partie absent; and they have no few other tricks to bring diseases.

We know for certain that magicians, witches, and conjurers, have by charms so bound som, that they could not have to do with their wives; and have made others so impotent, as if they had been gelt or made eunuchs. Neither do wicked men onely send diseases into man's bodie, but also devils themselvs. These truely are soon distracted with a certain furie, but in this one thing they differ from simple madness, for that they speak things of great difficultie, tell things past and hid, disclose the secrets of such as are present, and revile them manie waies, and are terrified, tremble and grow angrie by the power of divine words.

A historie.

One not very long agon, beeing by reason of heat exceeding drie in the night time, rising out of his sleep, and not findeing drink, took an apple that hee found by chance, and eating it, hee thought his jaws were shut and held fast as by ones hands, and that hee was almost strangled: and also, now possessed of a devil entring into him, hee seemed in the dark to bee devoured of a huge exceeding black dog, which hee, afterwards restored to his former health, orderly related to mee. There were divers, who by his pulse, heat and the roughness of his tongue, thought him to bee in a fever, and by his watching, and the perturbation of his minde, thought him onely to rave.

A historie.

Another young Noble man, som few years since, was troubled at set times with a shaking of the bodie, and as it were, a convulsion, wherewith one while hee would moov onely his left arm, another while the right arm, and also som times but one finger onely, somwhiles but one leg, somtimes the other, and at other times the whole trunk of his bodie, with such force and agilitie, that lying in his bed, hee could scarce bee held by four men; his head laie without anie shakeing, his tongue and speech was free, his understanding sound, and all his senses perfect even in the height of his fit. Hee was taken at the least ten times a daie, well in the spaces between, but wearied with labor: it might have been judged a true Epilepsie, if the understanding and senses had failed.

The most judicious Physitians who were called to him, judged it a convulsion, cosen-germane to the falling sickness, proceeding from a malign and venemous vapor impact in the spine of the back, whence a vapor dispersed it self over all the nervs, which pass from the spine every waie into the limbs, but not into the brain. To remoov this, which they judged the cause, frequent glysters are ordained, and strong purges of all sorts, cupping-glasses are applied to the beginnings of the nervs, fomentations, unctions, emplasters, first to discuss, then to strengthen and wear away the malign qualitie: These things doing little good, hee was sweated with bathes, stoves, and a decoction of *Guacum*, which did no more good then the former, for that wee were all far from the knowledg of the true cause of his disease: for in the third month, a certain devil was found to bee the autor of all this ill, bewraying himself by voice, and unaccustomed words and sentences, as well Latin as Greek (though the patient were ignorant of the Greek tongue): hee laied open manie secrets of the by-standers, and chiefly of the Physicians, derideing them for that hee had abused them to the patients great harm, becaus they had brought his bodie so low by needless purgations.

The devil shew's himself by speaking of greek.

When his father came to visit him, hee would crie out long before hee came at him, or saw him, drive away this visitant, and keep him from coming in here, or else pluck his chain from about his neck: for on this (as it is the custom of the French order of Knights) there hangs the image of St. *Michael*. If holie and divine things were read before him, hee shook and trembled more violently. When his fit was over, hee remembred all that was don, and affirmed that hee did it against his will, and that hee was forrie for it. The devil, forced by ceremonies and exorcisms, denied that hee was damned for anie crime, and said that hee was a spirit: beeing asked who hee was, and by what means and power hee did these things, hee said that hee had manie habitations into which hee could betake himself, and in the time of his rest, hee could torment others: that hee was cast into this bodie by a certain person whom hee would not name, and that hee entred by his feet up to his neck, and that hee would go forth again the same waie, when as his appointed time was com. Hee spoke of sundrie other things, as others which are possessed use to do.

Devils wax angrie, and are terrified by divine things.

Now I speak not these things as new or strange, but that it may appear that devils somtimes entring into the bodie, do somwhiles torment it by diverse and uncough waies; other whiles they do not enter in, but either agitate the good humors of the bodie, or draw the ill into the principal parts, or with them obstruct the veins or other passages, or chang the structure of the instruments, from which causes innumerable diseases, proceed: of these, devils

vils are the autors, and wretched and forlorn perſons the miniſters: and the reaſon of theſe things is beyond the ſearch of nature.

*Plinie* tel's that the Emperor *Nero* in his time, found magical arts moſt vain and falſ: but what need wee alledg profane writers, when as thoſe things that are recorded in Scripture of the pithoniſs, of the woman ſpeaking in her bellie, of King *Nebuchodonozor*, of the Magitians of *Pharaoh*, and other ſuch things not a few, proov that there both is, and hath been Magick. *Plinie* tel's of *Denarchus*, that hee taſteing of the entrails of a ſacrificed childe, turned himſelf into a Wolf. Wee reade in *Homer* that *Circes*, in the long wandring of *Ulyſſes*, changed his companions into beaſts, with an inchanted cup or potion: and in *Virgil*, that the growing corn may bee ſpoiled or carried away by inchantments: which things, unleſs they were approoved and witneſſed by manie men's credits, the wiſdom of Magiſtrates and Lawyers, would not have made ſo manie Laws againſt Magicians, neither would there have been a mulct impoſed upon their heads by the law of the twelv tables, who had inchanted other men's corn. But as in magical arts the devil doth not exhibit things themſelvs, as thoſe which hee cannot make, but onely certain ſhews or appearances of things: ſo in theſe which are anie waies accomodated to the uſe of Phyſick, the cure is neither certain, nor ſafe, but deceitful, captious, and dangerous.

I have ſeen the Jaundiſ, over the whole bodie, cured in one night, by a written ſcroul hanged about the neck: alſo I have ſeen Agues chaſed away by words and ſuch ceremonies, but in a ſhort while after they returned again and became much worſ. Now there are ſom vain things, and verily the fancies of old women, which becauſ they have long poſſeſſed the mindes of men, weakned with too much ſuperſtition, we term them ſuperſtitious. Theſe are ſuch as wee cannot truly ſay of them, wherefore and whence they have the faculties aſſcribed to them: for they neither ariſe from the temperament, neither from the other manifeſt qualities, neither from the whole ſubſtance, neither from a divine or magical power, from which two laſt mentioned, all medicines beyond nature, and which are conſequently to bee uſed to diſeaſes, whoſe eſſence are ſupernatural, muſt proceed. Such like old wive's medicines & ſuperſtitions remedies are written figures and characters, rings, where neither the aſſiſtance of God or Spirits is implored. Let me ask you, is it not a ſuperſtitious medicine to heal the falling ſickneſs, to carrie in writing the names of the three Kings, *Gaſpar*, *Melchior*, and *Balthaſar*, who came to worſhip Chriſt? To help the tooth ache; if one whil'ſt Maſs is in ſaying, touch his teeth, ſaying theſe words, *Os non comminuetis ex eo*? To ſtaie vomiting with certain ceremonies and words, which they abſent pronounce, thinking it ſufficient if that they but onely know the patient's name.

It is but a deceitful cure that is performed by the devil.

Old wive's ſuperſtitious medicines againſt divers diſeaſes

I ſaw a certain fellow that with murmuring a few words, and touching the part, would ſtanch bloud out of what part ſoever it flowed: there bee ſom who to that purpoſe ſaie this, *De latere ejus exivit Sanguis & Aqua*. How manie praiers or charms are carried about to cure agues? ſom takeing hold of the patient's hand, ſaie, *Æquè facilis tibi Febris hæc ſit, atque Mariæ virgini Chriſti partus*. Another waſheth his hands with the patient before the fit, ſaying to himſelf that ſolemn Pſalm, *Exaltabo te Deus meus Rex*, &c. If one tell an Aſs in his ear that hee is ſtung by a Scorpion, they ſaie that the danger is immediately over.

As there are manie ſuperſtitious words, ſo there are many ſuperſtitious writings alſo. To help ſore eies, a paper wherein the two greek letters, Ω and Α, are written muſt bee tied in a thread, and hanged about the neck. And for the tooth ache this ridiculous ſaying, *Strigiles, falcẽque dentatæ, dentium dolorem perſanate*. Alſo oft times there is no ſmall ſuperſtition in things that are outwardly applied. Such is that of *Apollonius* in *Plinie*, to ſcarifie the gums in the tooth-ach, with the tooth of one that died a violent death: to make pils of the ſkul of one hanged, againſt the bitings of a mad dog: to cure the falling ſickneſs by eating the fleſh of a wilde beaſt, killed with the ſame iron wherewith a man was killed: that hee ſhall bee free'd from a quartain ague who ſhall drink the wine whereinto the ſword that hath cut off a man's head, ſhall bee put; and hee, the parings of whoſe nails ſhall bee tied in a linnen cloth to the neck of a quick Eel, and the Eel let go into the water again. The pain of the Milt to bee aſſwaged, if a beaſt's Milt bee laid upon it, and the Phyſician ſaie that hee cure's or make's a medicine for the Milt. Anie one to bee free'd from the cough, who ſhall ſpit in the mouth of a Toad, letting her go away alive. The halter wherein one hath been hanged put about the temples, to help the head-ach. This word *Abracadabra*, written on a paper, after the manner deſcribed by *Serenus*, and hanged about the neck, to help agues or fevers, eſpecially ſemitertians. What truth can bee in that which ſundrie affirm, that a leaf of *Lathyris*, which is a kinde of Spurge, if it bee plucked upwards, will cauſ vomit, but broken downwards, will moov to ſtool? You may alſo finde manie other ſuperſtitious fictions concerning herbs, ſuch as *Galen* report's that *Andreas* and *Pamphilus* writ, as incantations, transformations, and herbs dedicated to conjurers and devils. *Lib.6.de ſimp.*

I had thought never in this place to have mentioned theſe and the like, but that there may bee every where found ſuch wicked perſons, who leaving the arts and means, which are appointed by God to preſerv the health of man's bodie, flie to the ſuperſtitious and ridiculous remedies of ſorcerers, or rather of devils, which notwithſtanding the devil ſomtimes

make's to perform their wish't for effects, that so hee may still keep them ensnared and addicted to his service. Neither is it to bee approoved which manie say, that it is good to bee healed by anie art or means, for that healing is a good work. This saying is unworthy of a Christian, and savor's rather of him that trust's more to the devil then in God. Those Empericks are not of the societie of Sorcerers and Magitians, who heal simple wounds with drie lint, or lint dip't in water: this cure is neither magical nor miraculous, as many suppose, but wholly natural, proceeding from the healing fountains of nature, wounds and fractures, which the Surgeon may heal by onely takeing away the impediments, that is pain, defluxion, inflammation, an absces and gangrene, which retard and hinder the cure of such diseases The following examples will sufficiently make evident the devil's maliciousnes, alwaies wickedly and craftily plotting against our safetie and life.

*Lib. epist. 38. ep.* A certain woman of *Florence* (as *Langius* write's) haveing a malign ulcer, and beeing troubled with intolerable pain at the stomach, so that the Physitians could give her no eas: behold on a sudden shee vomited up long and crooked nails, and bras needles, wrapped up with wax and hairs, and at length a great gobbet of flesh, so big that a Giants jaws could scarce swallow it.

But that which happened in the year of our redemption 1539. in a certain town called *Fugenstal*, in the Bishoprick of *Eistet*, exceed's all credit, unles there were eie-witnesses of approoved integritie yet living. In this town, one *Ulrich Neuseser* an husbandman, was tormented with grievous pain in the one side of his bellie, hee suddenly got hold of an iron key with his hand under the skin, which was not hurt, the which the Barbar-Surgeon of the place cut out with a razor; yet for all this the pain ceased not, but hee grew every daie worse then other: wherefore expecting no other remedie but death, hee got a knife and cut his throat. His dead bodie was opened, and in his stomach were found a round and loggish piece of wood, four steel knives, part sharp, and part toothed like a saw, and two sharp pieces of iron, each whereof exceeded the length of a span, there was also as it were a ball of hair. All these things were put in by the craft and deceit of of the devil. Thus far *Langius*.

## CHAP. XVIII.

### *Of the Cozenages and crafty Tricks of Beggars.*

HAveing treated of Monsters, it follow's that wee speak of those things which either of themselvs, by reason of their nature full of admiration, have som kind of monstrousnes in them; or else from som other waies, as by the craft and cozenage of men. And becaus to the last mentioned crafts of the Devil, the subtle devices of begging companions are somwhat alike, therefore I will handle them in the next place, that the Surgeon beeing admonished of them, may bee more cautious and cunning in discerning them when hee meet's with them.

An historie of a counterfeit arm.

*Anno Dom.* 1525. when I was at *Anjou*, there stood a craftie beggar begging at the Church door, who tying and hideing his own arm behinde his back, shewed in steed thereof, one cut from the bodie of one that was hanged, and this hee proped up and bound to his brest, and so laid it open to view, as if it had been all enflamed, so to moov such as passed by unto greater commiseration of him. The cozenage lay hid, every one giving him monie, until at length his counterfeit arm not beeing surely fastened, fell upon the ground, many seeing and observing it: hee beeing apprehended and laid in prison, by the appointment of the Magistrate, was whipped through the town, with his falf arm hanging before him, and so banished.

Another of a cancrous breast

I had a brother called *John Parey*, a Surgeon, who dwelt in *Vitre* in *Britanie*; hee once observed a young woman begging, who shewed her breast, as if it had a cancrous ulcer thereon, looking fearfully by reason of much sordid filth, wherewith it seemed to defile the cloth that lay under it. But when as hee had more diligently beheld the woman's face, and the fresh color thereof, as also of the places about the ulcer, and the good habite of the whole bodie agreeable to that color (for shee was somwhat fat, and of a very good habit of bodie) hee was easily hereby induced to suspect som roguery and deceit. Hee acquainted the Magistrate with this his suspicion, and got leav that hee might carrie her home to his hous, so to search her more narrowly. Where opening her breast, hee found under her arm-pit, a spong moistned with a commixture of beast's bloud and milk, and carried through an elder-pipe to the hidden holes of her counterfeit cancer. Therefore hee foment's her breast with warm water, and with the moisture thereof looseth the skins of black, green, and yellow frogs, laid upon it, and stuck together with glew, made of bole armenick, the white of an egg, and flower; and these beeing thus fetched off, hee found her breast perfectly sound.

The beggar beeing cast for this into prison, confessed that shee was taught this trick by a beggar that lay with her, who himself also, by putting about his leg an Oxes Milt, and perforating it in sundry places, that so the forementioned liquor might drop out, counterfeited an ulcer of a monstrous bigness and malignitie, covering the edges of the Milt on every side

side with a filthie cloth. This beggar was diligently enquired after, but could not bee found; and so shee was whipped and banished.

Within less then a year after, there came into the same citie another notable craftie companion, who presently takeing up the Church doors, laid open his wares; to wit, a Kercher with som small pieces of monie lying thereon, a wooden Barrel, and* Cliquets, wherewith hee would ever now and then make a great noise: his face was spread over with great thick pustles, beeing of a blackish red color, and made with glue like those that have the Leprosie: this his ghastly look made him to bee pitied by all men, which was the cause that everie one gave him monie. Then my brother came somwhat nearer him, and asked him how long hee had been troubled with this so cruell disease; hee answered with an obscure and hoarse voice, that hee was born a Leper from from his mother's wymb, and that his parents both died of this wicked disease, so that their members fell away piece-meal. Now hee had a woollen swathe about his chaps, wherewith (haveing his left hand under his cloak) hee so straitned his chaps, that much black bloud rose into his face, and made him so hoarse that hee could scarce speak; yet hee could not contain himself, but that in speaking hee ever now and then slackned the swathe with his hand, the freelier to draw his breath: which when my brother had observed, suspecting som cozenage, hee obtained leav of the Magistrate to search and examine the man whether hee were truly leprous, or no. First therefore hee took away his swathe or rowler that was about his neck, then washed his face with warm water, so that the counterfeit glued pustles were dissolved, and his face (free from all tainture) shewed it self of a good and natural color and shape. Then hee laid bare his whole body, and diligently viewed each part, and found no sign of a Leprosie, one or other. Which when the Magistrate once heard, hee made him to bee put in prison, and to bee thrice whipped through the streets of the citie, with his barrel hanging before him, and his cliquets behinde him, adding thereto the punishment of perpetual banishment. It hap'ned that as hee was whipped the third market-day, the people cried out to the hang-man in jest, that hee should not fear to lash him soundly, for beeing leprous hee could not feel it: the executioner incited by this crie of the people, did so belabor him, that the wretch died of his whipping within a short while after, haveing a just reward for his wickedness. For these impostors, besides that they live like drones, feigning this or that disease, and so beeing idle, enjoy the fruits of others labors; they also divers times conspireing together, take away the lives and goods of honest and substantial citizens, and other people: for there are som of them, that in an evening, as men that have no habitation, desire lodging for a night, and it beeing granted them, they, when as the master of the hous and his familie are asleep, open the doors to their comrades, men as wicked as themselvs, and kill and carrie away all they can.

Of one feigning himself leprous.

* Cliquets are things made somwhat resembling a small wool-card, but have two or three little pieces of boards so fastned together with leathers, that they will make a great noise with them and these are used by the French beggars.

Certainly wee may justly affirm, that this craftie begging is the mother and school of all dishonestie: for how manie acts of bawdrie and poisoning everie where corrupt the wells and publick fountains? How manie places have been burnt under the shew of begging? Where can you get more fit spies? Where more fit undertakers and workers of all manner of villanie, then out of the crew of these beggers?

A multitude of beggars hurtful to the citie.

Som of them there are, who besmear their faces with soot laid in water, so to seem to have the Jaundis. But you may at the first sight finde out the deceit, by the native whiteness of the utter coat of the eie, called *Adnata*, which in such as truly have the Jaundis, useth to bee died and overcast with a yellowish color; also you may bee more certain thereof, if you wet a cloth in water or spittle, and so rub the face, for the adventitious yellowness will quickly vanish, and the true native color shew it self.

How to discover such a counterfeit the Jaundis.

Som there bee, who not content to have mangled, and filthily exulcerated their limbs with caustick herbs, and other cauteries; or to have made their bodies more swoln, or elf lean, with medicated drinks; or to have deformed themselvs som other waie, but from good and honest Citizens, who have charitably relieved them, they have stoln children, have broken or dislocated their arms and legs, have cut out their tongues, have depressed the chest, or whole breast; that with these, as their own children, begging up and down the countrie, they may get the more relief, pitifully complaining that they came by this mischance by thunder, or lightning, or som other strange accident.

Lastly, they part the Kingdom amongst themselvs as into Provinces, and communicate by letters one to another, what news or new quaint devises there are to conceal or advance their roguerie: to which purpose they have invented a new language onely known to themselvs, so to discours together and not to bee understood by others. [Wee here vulgarly term it *Canting*.]

Dr. *Flecelle*, a Physician of *Paris*, entreated mee to bear him companie to his countrie hous at *Champigny*, four miles from *Paris*. Where assoon as wee arrived, and were walking in the Court, there came presently to us a good lustie well flesh't manlie woman, begging alms for St. *Fiacre* sake, and takeing up her coat and her smock, shee shewed a great gut hanging down som half a foot, which seemed as if it had hanged out of her fundament, whereout there dropped filth like unto *pus*, which had all stained her legs and smock, most beastly and filthie to look upon. *Flecelle* asked her how long shee had been troubled with this disease: shee

Of one counterfeiting the falling of the fundament.

ſhee anſwered that it was four years ſince ſhee firſt had it. Hence hee eaſily gathered that ſhee plaied the counterfeit: for it was not likelie that ſuch abundance of purulent matter came forth of the bodie of ſo well fleſh't and colored a woman; for ſhee would rather have been verie lean and in a conſumption. Wherefore provoked with juſt anger, by reaſon of the wickedneſs of the deceit, hee run upon her and threw her down upon the ground, and trod her under his feet, and hit her divers blows npon the bellie, ſo that hee made the gut, which hung at her, to com away, and by threatning her with more grievous puniſhment, made her confeſs the cozenage, and that it was not her gut, but of an ox, which being filled with bloud and milk, and tied at both ends, ſhee put the one of them into her fundament, and let the filth flow forth at verie little holes.

Of one feigning the falling down of the womb.

Not verie long ago, a woman equally as ſhameleſs, offered her ſelf to the overſeers of the poor of *Paris*, entreating that ſhee might bee entred for one of their Penſioners, for that her womb was fallen down by a dangerous and difficult birth, wherefore ſhee was unable to work for her living. Then they commanded that ſhee ſhould bee tried and examined, according to the cuſtom, by the Surgeons which are therefore appointed. Who ſeeing how the whole buſineſs was carried, made report ſhee was a counterfeit; for ſhee had thruſt an ox's bladder, half blown and beſmeared with beaſtlie bloud by the neck, whereto ſhee had faſtned a little ſponge, into the neck of her womb, for the ſponge beeing filled and ſwollen up by the accuſtomed moiſture of the womb, ſo held up the ox's bladder that hanged thereat, that ſhee might ſafely go vvithout anie fear of the falling of it out, neither could it bee pulled forth but vvith good force. For this her device ſhee vvas put into priſon, and beeing firſt vvhipped, vvas after baniſhed. Their cozenage is not much unlike this, vvho by fitly applying a ſheep's paunch to their groin, counterfeit themſelvs to bee burſten.

Of a begger that feigned her ſelf to have a ſnake in her bellie.

*Anno Dom.* 1561. there came to *Paris* a luſtie, ſtout, and verie fat Norman vvoman, beeing about ſom thirtie years old, who begging from door to door, did caſt to meet with rich women, and verie familiarly and pittifully would relate unto them her misfortune; ſaying, ſhee had a ſnake in her bellie, which crep't in at her mouth as ſhee ſlep't in an hemp-land: ſhee would let one feel her ſtir, by putting their hand unto her bellie, adding alſo that ſhee was troubled daie and night with it's unceſſant gnawing of her guts. The noveltie of this ſad chance, mooved all to pitie and admiration, wherefore as much as they could, they aſſiſted her with means and counſel. Amongſt the reſt, there was a woman of great devotion and charitie, who ſending for Dr. *Hollerius*, *Chevall*, and mee, asked us if this ſnake could by anie means be gotten forth. *Hollerius* gave her a ſtrong purgation, hopeing that by ſtirring up the expulſive facultie, the ſerpent might bee caſt forth, together with the noxious humors. But this hope had no ſuch ſucceſs. Wherefore when as wee met again, wee thought it fit to put a *Speculum matricis* into the neck of her womb, ſo to ſee if wee could diſcern either her head or tail: but I makeing large dilatation of her womb, could ſee no ſuch thing, onely wee obſerved a certain voluntarie motion, whereof ſhee her ſelf was the author, by contracting and dilateing the muſcles of the lower bellie. Which when as wee had obſerved, perceiving the deceit and impoſture, wee thought good ſo to terrifie and her, and make her confeſs the deceit, to tell her that ſhee muſt take another, but that a more ſtrong purgation; that what wee could not do by the former, as more gentle, wee might attain to by the later, as far ſtronger. Shee diſſembling all fear, and conſcious of her craft and diſſimulation, after wee were gon in the evening, packing up her ſtuff, and a great deal more then her own, ſhee ſecretly ſtole away, not bidding her hoſteſs farewel: and thus at length the fraud was apparent, to the loſs of the honeſt gentlewoman. I ſaw this baggage, ſix daies after, ſitting luſtily upon a Pack-horſ, at the gate *Mont-martre*, and laughing heartily with ſuch as brought Sea-fiſh to town; and ſhee was returning (as it was moſt likely) into her countrie, ſeeing her cozenage was diſcovered here.

The craft of ſuch as feign themſelvs to have the falling ſickneſs. Of ſuch as feign themſelvs leprous.

Such as feign themſelvs dumb, draw back and double their tongues in their mouths. Such as falling down counterfeit the falling ſickneſs, binde ſtraitly both their wreſts with plates of iron, tumble and rowl themſelvs in the mire, ſprinkle and defile their heads and faces with beaſts bloud, and ſhake their limbs and whole bodie. Laſtly, by putting ſope into their mouths, they foam at the mouth like thoſe that have the falling ſickneſs. Otherſom with flour make a kinde of glue, wherewith they beſmear their whole bodies, as if they had that Leproſie or Scab, that is vulgarly termed, *Malum ſancti manis*. Neither muſt wee think this art of counterfeiting and cheating begging to bee new, and of late invention, for long ago it flouriſhed in *Aſia*, even in the time of *Hippocrates*, as may appear by his book *De Aëre, Locis, & Aquis*. But by how much this diſeaſ hath taken more deep root, and grown more inveterate by proceſs of time, by ſo much it muſt more diligently and carefully bee looked to and prevented, by cruelly puniſhing ſuch counterfeits: for that by this feigned begging, as the nouriſher of ſloth, and ſhop of all diſhoneſtie, that which is taken from the good is beſtowed upon the ill, and one wicked and counterfeit begger hurt's all other wretched people.

CHAP.

## CHAP. XIX.

*Of strange or monstrous accidents in diseases.*

WHat monstrousnes soever was in the last mentioned parties, it was made up by the craft of beggars for filthie gain. But if there bee anie monstrousnes in the following narrations, it is of nature, but working, as it were, miraculously, by som secret and occult means; for thus there are oft times monsters in diseases. Before the town of St. *John de Angeley*, a souldier called *Francis*, of the companie of Captain *Muret*, was wounded with a Harquebuz-shot on the bellie, between his navel and sides; the bullet was not taken out, becaus the Surgeons, who searched him diligently, could not finde it: wherefore hee was troubled with grievous and tormenting pains, until the ninth daie after hee received the wound, the bullet came forth at his fundament: wherefore within three weeks after hee was perfectly whole. Hee was healed by *Simon Crinay*, the Surgeon of the French companies.

Monsters happen also in diseases.

A bullet shot into the bellie came forth at the fundament.

*James Pope*, Lord of St. *Albans* in *Dauphine*, was wounded at the skirmish at *Chasenay*, having three harquebuz bullets entring into his bodie, one whereof pierced under his throat, where it buncheth out as with a knot, neer to the pipe of his longs, even to the beginning of the *vertebræ* of the neck, in which place the leaden bullet stuck, and as yet doth remain. Hereupon hee was afflicted with manie and fearful symptoms, as a fever, and a great swelling of his whole neck, so that for ten whole daies hee could swallow nothing but broaths and liquid things. Yet hee recovered, and remaineth well at this present, by the cure of *James Dalam* the Surgeon.

A bullet sticking in the throat and patient recovering.

*Alexander Benedictus* make's mention of a certain countrie-man, who, shot into the back with a dart, drawing out the shaft, the head was left behinde, beeing in length about the bredth of two fingers, but hooked and sharp on the sides. When as the Surgeon had carefully and diligently sought for it, and could by no means finde it, hee healed up the wound, but two months after this crooked head came forth at his fundament.

*Lib. 3. anatom. cap. 9.*

A crooked iron shot into the back came forth at the fundament.

The same author telleth that at *Venice* a virgin swallowed a needle, which som two years after shee voided by urine, covered over with a stonie matter, gathered about viscous humors.

A swallowed needle voided by urine.

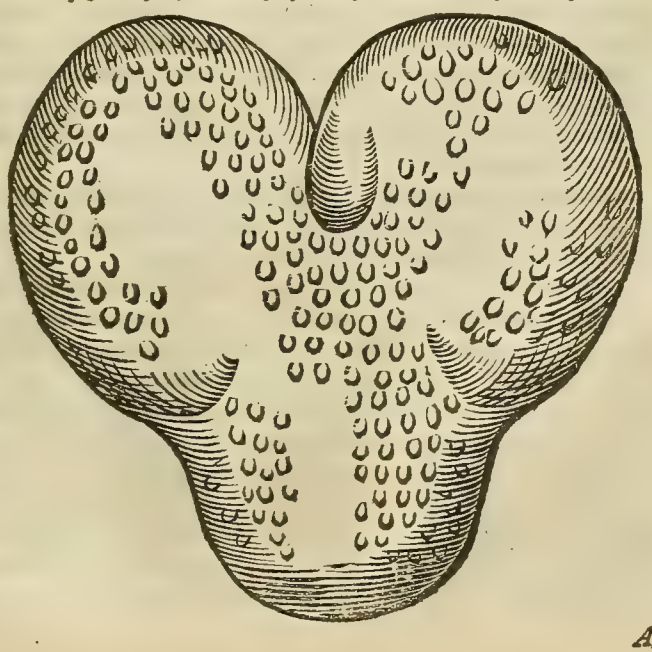
*Catherine Perlan*, the wife of *William Guerrier*, a Draper of *Paris*, dwelling in the Jewrie, as shee rode on horse-back into the countrie, a needle out of her pin-cushion, was got under her by accident, ran so deep into her right buttock, that it could not by anie art or force bee plucked forth. Four months after shee sent for mee to com to her, and shee told mee that as often as shee had to do with her husband, shee suffered extreme pricking pain in her right groin; putting my hand thereto, as I felt it, my fingers met with somthing sharp and hard: wherefore I used the matter so, that I drew forth the needle all rustie: this may bee accounted a miracle, that steel, naturally heavie, should rise upwards, from the buttock to the groin, and pierce the muscles of the thigh, without causing an abscess.

A needle running in at the buttock came forth at the groin.

*Anno Dom.* 1566. the two sons of *Laurence Collo* (men excellent in cutting for the stone) took forth a stone of the bigness of a wall-nut, in the mid'st whereof was a needle, just like those that shoo-makers use: the patient's name was *Peter Cocquin*, dwelling in the strret *Galand* at the place called *Maubert* at *Paris*, and I think hee is yet living. This stone was shewed to King *Charls* the ninth, for the monstrousnes of the thing, I beeing then present, which beeing given me by the Surgeon, I preserv amongst my other rarities.

A needle in the mid'st of a stone taken forth of the bladder.

*The figure of a stone taken forth of the bladder of a Confectioner.*



*Anno Dom.* 1570. the Dutchess of *Ferrara* at *Paris*, sent for *John Collo*, to take a stone out of a Confectioner. This stone, though it weighed nine ounces, & was as thick as one's fist, yet was it happilie taken out, the patient recovering, *Francis Rousset*, and *Joseph Javelle*, the Dutchess Physicians, beeing present. Yet not long after this Confectioner died by the stoppage of his water, by reason of two other little stones, which about to descend from the kidnies to the bladder, staied in the mid-way of the Ureters. The figure of the extracted stone was this.

*Anno*

*Anno Dom.* 1569. *Laurence Collo* the younger, took three ſtones out of the bladder of one dwelling at *Marly*, called commonly *Tire-vit*: becauſ beeing troubled with the ſtone from the tenth year of his age, hee continually ſcratched his yard, each of the ſtones were as big as an hen's egg; of color white, they all together weighed twelv ounces. When they were preſented to King *Charls*, then lying at Saint *Maure des Fauſſez*, hee made one of them to bee broken with a hammer, and in the middeſt thereof there was found another, of a cheſnut color, but otherwiſe much like a Peach ſtone. Theſe three ſtones, beſtowed on mee by the brethren, I have here repreſented to the life.

*The effigies of the three forementioned ſtones, whereof one is broken.*

I have in the diſſecting of dead bodies, obſerved divers ſtones, of various forms and figures, as of pigs, whelps, and the like. *Dalechampius* telleth that hee ſaw a man, which by an abſceſs of his loins, which turned to a Fiſtula, voided manie ſtones out of his kidnies, and yet notwithſtanding could endure to ride on horſ-back, or in a coach. *John Magnus*, the King's moſt learned and skilful Phyſician, haveing in cure a woman, troubled with cruel torment and pains of the bellie and fundament, ſent for mee, that by putting a *Speculum* into the fundament, hee might ſee if hee could perceiv anie diſcernable cauſ of ſo great and pertinacious pain: and when as hee could ſee nothing which might further him in the findeing out of the cauſ of her pain (following reaſon as a guid) by giveing her often glyſters and purgations, hee brought it ſo to paſs, that ſhee at length voided a ſtone at her fundament of the bigneſs of a Tennis-ball: which once avoided, all her pains ceaſed.

A ſtone by the force of purging medicines voided by the fundament. *5. Epid.*

*Hippocrates* tell's that the ſervant of *Dyſeris* in *Lariſſa*, when ſhee was young, in uſeing venerie was much pained, and yet ſomtimes without pain, yet ſhee never conceived. But when as ſhee was ſixtie years old, ſhee was pained in the after-noon as if ſhee had been in labor. When as ſhee one daie before noon had eaten manie leeks, afterward ſhee was taken with a moſt violent paiu, far exceeding all her former, and ſhee felt a certain rough thing riſeing up in the orifice of her womb. But ſhee falling into a ſwoun, another woman putting in her hand, got out a ſharp ſtone of the bigneſs of a whirl, and then ſhee forthwith became well, and remained ſo.

A ſtone comming out of the neck of the womb.

*Lib. 1. cap. de palp. cord.*

In a certain woman, who, as *Hollerius* tell's, for the ſpace of four months was troubled with an incredible pain in makeing water, two ſtones were found in her heart, with manie abſceſſes, her kidnies and bladder beeing whole.

*Anno Dom.* 1558. I opened in *John Bourlier* a Tailor, dwelling in the ſtreet of St. *Honoré*, a watrie abſceſs in his knee, wherein I found a ſtone, white, hard, and ſmooth, of the thickneſs of an Almond; which beeing taken out, hee recovered. Certainly there is no part of the bodie wherein ſtones may not breed and grow.

No part of the bodie wherein ſtones may not bee found.

*Anthonie Benevenius* a Florentine Phyſician write's, that a certain woman ſwallowed a braſs needle without anie pain, and continued a year after without feeling or complaining of it: but at the end thereof ſhee was moleſted with great pains in her bellie; for helping of which ſhee asked the adviſe of all the Phyſicians ſhee could, makeing, in the interim, no mention of the ſwallowed needle. Wherefore ſhee had no benefit by all the medicines ſhee took; and ſhee continued in pain for the ſpace of two years, until at length the needle came forth at a little hole by her navel, and ſhee recovered her health.

A needle ſwallowed, came forth at the navel ſom two years after.

A Scholar

A Scholar named *Chambelant*, a native of *Bourges*, a student in *Paris*, in the Colledg of *Presse*, swallowed a stalk of grass, which came afterwards whole out between two of his ribs, with the great danger of the scholar's life. For it could com there unless by passing or breaking through the lungs, the encompassing membrane, and the intercostal muscles, yet hee recovered, *Fernelius* and *Haguet* having him in cure.

A sprig of gras swallowed came forth whole again between the ribs.

*Cabrolle* Chirurgian to *Mounsieur* the Marshal of *Anville*, told mee that *Francis Guillenet* the Chirurgian of *Sommiers*, a small village som eight miles from *Mompelier*, had in cure, and healed a certain Shepherd, who was forced by theevs to swallow a knife of the length of half a foot, with a horn handle of the thickness of ones thumb: hee kept it the space of half a yeer, yet with great pain, and hee fell much away, but yet was not in a consumption, until at length an abscess tiseing in his groin, with great store of verie stinking quitture, the knife was there taken forth in the presence of the Justices, and left with *Joubert* the Physician of *Mompelier*.

A knife swallowed, came forth at an abscess in the groin.

*Mounsieur* the Duke of *Rohan* had a Fool called *Guido*, who swallowed the point of a sword of the length of three fingers, and hee voided it at his fundament on the twelfth daie following, yet with much adoo: there are yet living manie Gentlemen of *Britanie*, who were eie-witnesses thereof.

The point of a sword swallowed came forth at the fundament.

There have been sundrie women with childe, who have so cast forth piece-meal children that have died in their wombs, as that the bones have broke themselvs a passage forth at the navel, but the flesh, dissolved as it were into quitture, flowed out by the neck of the womb and the fundament, the mothers remaining alive, as *Dalechampius* observ's out of *Albucrasis*.

Wonderful excretions of infants out of the womb.

Is it not verie strange that there have bin women, who troubled with a fit of the Mother, have lien three whole daies without motion, without breathing, or pulse that were anie waie apparent, and so have been carried out for dead?

Women troubled with the *Mother* laid out for dead.

A certain young man, as *Fernelius* tell's, by somwhat too vehement exercise, was taken with such a cough, that it left him not for a moment of time, until hee therewith had cast forth a whole impostume of the bigness of a pigeon's egg, wherein, beeing opened, there was found quitture exquisitely white and equal. Hee spit blood two daies after, had a great fever, and was much distempered, yet notwithstanding hee recovered his health.

An impostume spit out, of the bigness of a Pigeon's egg.

*Anno Dom.* 1578. *Stephana Chartier*, dwelling at St. *Maure des Fausses*, a widow of fortie yeers old, beeing sick of a tertian Fever, in the beginning of her fit vomited up a great quantitie of choler, and together therewith three hairie worms, in figure, color, and magnitude like the worms called Bear-worms, yet somwhat blacker; they lived eight whole daies after without anie food: the Chirurgian of this town brought them to Dr. *Milot*, who shewed them to *Feure*, *Le Gros*, *Marescot* and *Courtin* Physicians, and to mee also.

Worms cast up in the fit of an Ague,

This following historie, taken out of the Chronicles of *Monstrele*, exceed's all admiration. A certain Franck-Archer of *Meudon*, four miles from *Paris*, was for robberie condemned to bee hanged: in the mean time it was told the King by the Physicians, that manie in *Paris* at that time were troubled with the stone, and amongst the rest the Lord of *Boscage*, and that it would bee for the good of manie, if they might view and discern with their eies the parts themselvs wherein so cruel a disease did breed, and that it might bee don much better in a living then in a dead bodie, and that they might make trial upon the bodie of the Franck-Archer, who had formerly been troubled with these pains. The King granted their request; wherefore opening his bodie they viewed the breathing parts, and satisfied themselvs as much as they desired, and having diligently and exactly restored each part to its proper place, the bodie, by the King's command, was sewed up again, and dressed and cured with great care. It came so to pass, that this Franck-Archer recoverd in a few daies, and getting his pardon, got good store of monie besides.

*This narration exceed's not onely all admiration, but also belief.*

*Alexander Benedictus* tell's that hee saw a woman called *Victoria*, who having lost all her teeth, and beeing bald, yet had others came up in their places, when as shee was fourscore yeers old.

*Stephen Tessiter* a Chirurgian of *Orleance*, told mee that not long ago hee cured one *Charls Verignel*, a Serjeant of *Orleance*, of a wound received in his ham, whereby the two tendons bending the ham, were quite cut in sunder. Hee took this order in the cure; hee caused the patient to bend his leg, then hee sewed together the ends of the cut-tendons, then placed the member in that site, and handled with that art, that at length hee healed the wound, the patient not halting at all. Truly this is a memorable thing, and carefully and heedfully to bee imitated by the young Chirurgian.

*Pract. lib. 64. cap. 1.*

How manie have I seen, who wounded and thrust through the bodie with swords, arrows, pikes, bullets, have had portion of the brain cut off by a wound of the head, an arm or leg taken away by a cannon-bullet, yet have recovered? and how manie on the contrarie, have died of light and small wounds, not worth the speaking of.

A certain man was shot in near to his groin with an arrow, whom wee have seen, saith *Hippocrates*, and hee recovered beyond all men's expectation; The arrow's-head was not taken forth, for it was verie deep in, neither did the wound bleed verie much, neither did hee halt: but wee found the head, and took it forth six yeers after hee was hurt.

*5. Epidem.*

Now

Now *Hippocrates* give's no reaſon of it's ſo long ſtaie, but that hee ſaith it might bee ſuſpected it laie hid between the nervs, and that no vein nor arterie was cut thereby.

## CHAP. XX.

*Of the wonderful original, or breeding of ſom creatures.*

*Boiſt. in hiſtor. prdig.*

WEE have read in *Boiſtey*, that a certain work-man of *Avignion*, when as hee lived in that cittie, opened a leaden coffin, wherein a dead bodie laie, that was ſo cloſely ſaudered, that the air could not get in; and as hee opened it, hee was bitten by a ſerpent that laie therein, with ſo venomous and deadlie a bite, that it had neer to have coſt him his life. Yet the original of this creature is not ſo prodigious as hee ſuppoſeth, for it is an uſual thing for a Serpent to breed of anie putrefied carcaſs, but chiefly of man's.

It is a common thing for a ſerpent to breed of the dead corp's of a man.

*Baptiſta Leo* write's, that in the time of Pope *Martin* the fifth, there was a live-Serpent found encloſed in a vaſte, but ſolid Marble, no chink appearing in ſuch denſ ſoliditie, whereby this living creature might breathe.

A live ſerpent in a ſolid Marble.

Whileſt in my vine-yard, that is at *Meudon*, I cauſſed certain huge ſtones to bee broken to pieces, a Toad was found in the mid'ſt of one of them. When as I much admired thereat, becauſ there was no ſpace wherein this creature could bee generated, increaſ, or live; the Stone-cutter wiſhed mee not to marvel thereat, for it wss a common thing, and that hee ſaw it almoſt everie daie. Certainly it may com to paſs, that from the more moiſt portion of ſtones, contained in places moiſt and under ground, and the celeſtial heat mixing and diffuſeing it ſelf over the whole maſs of the world, the matter may bee animated for the generation of theſe creatures.

The cauſ of ſuch wonderful generations.

## CHAP. XXI.

*Of the wondrous nature of ſom marine things, and other living creatures.*

THE laſt mentioned creatures were wonderful in their original, or rather in their growth: but theſe which follow, though they bee not wonderful of themſelvs, as thoſe that conſiſt of their own proper nature, and that working well and after an ordinarie manner; yet they are wondrous to us, or rather monſtrous, for that they are not verie familiar to us. For the raritie and vaſtneſs of bodies, is in ſom ſort monſtrous. Of this ſort there are manie, eſpecially in the Sea, whoſe ſecret corners and receptacles are not pervious to men: as Tritons, which from the middle upwards are reported to have the ſhape of men. And the *Strenes*, *Nereides* or Meremaids, who (according to *Plinie*) have the faces of women, and ſcalie bodies; yea, where as they have the ſhape of man: neither yet can the forementioned confuſion and conjunction of ſeeds take anie place here, for as wee lately ſaid, they conſiſt of their own proper nature.

*Lib.9.cap.*

When *Mena* was Preſident of *Egypt*, and walked on the banks of *Nilus*, hee ſaw a Sea-monſter in the ſhape of a man, comming forth of the waters: his ſhape was juſt like to a man even to the middle, with his countenance compoſed to gravitie, his hair yellow, yet intermixed with ſom graie, his ſtomach bonie, his arms orderly made and jointed, his other parts ended in a fiſh. Three daies after in the morning, there was ſeen another Sea-monſter, but with ſhape or countenance of a woman, as appeared by her face, her long hair, and ſwoln breaſts: both theſe monſters continued ſo long above water, that anie one might view them verie well

*The effigies of the* Triton *and* Siren *of* Nilus.

In

In our times, saith *Rondeletius*, in *Norway* was a monster taken in a tempestuous sea, the which as manie as saw it, presently termed a Monk, by reason of the shape which you may see here set forth.

*The figure of a fish resembling a Monk.*

*The figure of a fish in the habit, or shape of a Bishop.*

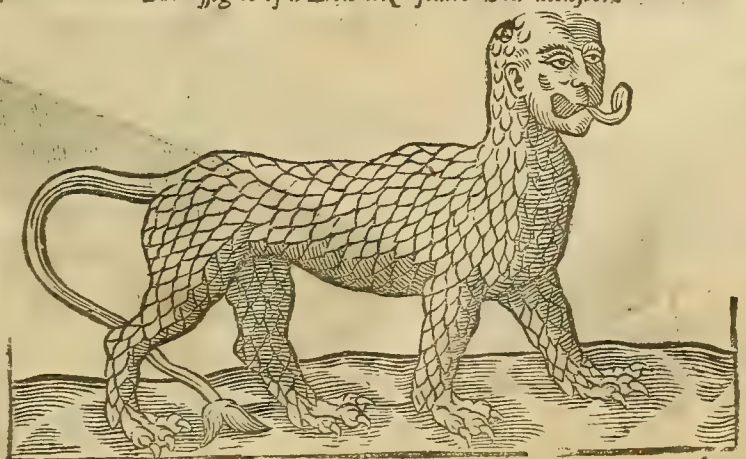
*Anno Dom.* 1531. there was seen a sea-monster in the habit of a Bishop, covered over with scails: *Rondeletius* and *Gesner* have described it.

*Gesner* professeth that hee received from *Jerom Cardane* this monster, having the head of a Bear, the feet and hands of an Ape.

*The effigies of a Sea-moster headed like a Bear.*

*The effigies of a Lion-like scalie Sea-monster.*

Not long before the death of Pope *Paul* the third, in the mid'st of the Tyrrhene sea, a monster was taken, & presented to the successor of of this *Paul:* it was in shape & bigness like to a Lion, but all scalie; and the voice was like a man's voice. It was brought to *Rome* to the great admiration of all men, but it lived not long there, beeing destitute of it's own natural place and nourishment, as it is reported by *Philip Forrest.*



*Lib. 5. Chron.*

*Anno Dom.* 1523. the third daie of *November*, there was ſeen at *Rome* this ſea-monſter, of the bigneſs of a childe of five years old, like to a man even to the navel, except the ears; in the other parts it reſembled a fiſh.

*The effigies of a Sea-monſter with a man's face.*

*Geſner* make's mention of this Sea-Monſter, and ſaith that hee had the figure thereof from a Painter, who took it from the verie fiſh, which hee ſaw at *Antwerp*. The head look's verie ghaſtly, having two horns, prick-ears, and arms not much unlike a man, but in the other parts it was like a fiſh. It was taken in the Illyrian Sea, as it came a ſhore out of the water to catch a little childe: for being hurt by ſtones caſt by fiſher-men that ſaw it, it returned a while after to the ſhore from whence it fled, and there died.

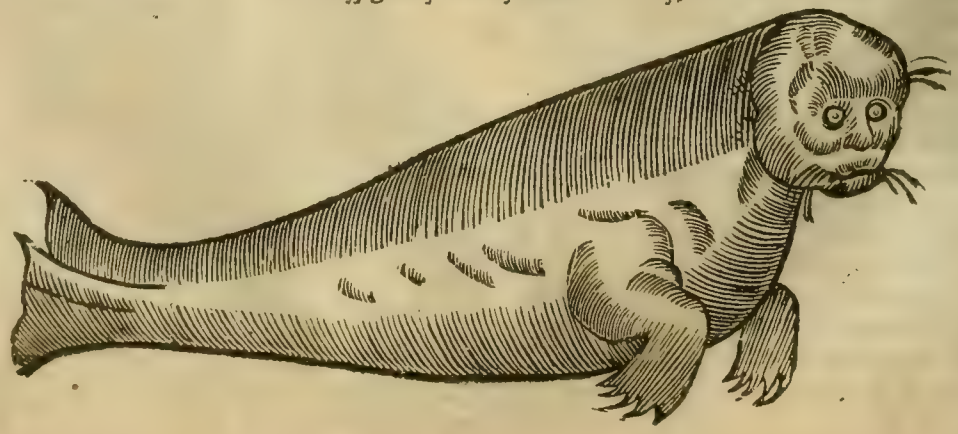
*The effigies of a Sea-Devil.*

*Geſner* tel's that a Sea-monſter with the head, mane, and breaſt of a horſ, and the reſt of his bodie like a fiſh, was ſeen and taken in the ocean-Sea, brought to *Rome*, and preſented to the Pope.

*Olaus Magnus* tel's that a Sea-monſter taken at *Bergen*, with the head and ſhape of a Calf, was given him by a certain Engliſh Gentleman. The like of which was preſented lately to King *Charls* the ninth, and was long kept living in the waters at *Fountain-Bleau*, and it went oft-times a ſhore. This is much different from the common Sea-calf or Seal.

* This here figured is the ſea Morſ, taken commonly by our men in their greenland voiages: and I judg the ſea-Bore and Elephant to bee the ſame, but that the Painter hath ſhewed his skil too much in the one: and the other is an old Morſ, as this here figured is a young one.

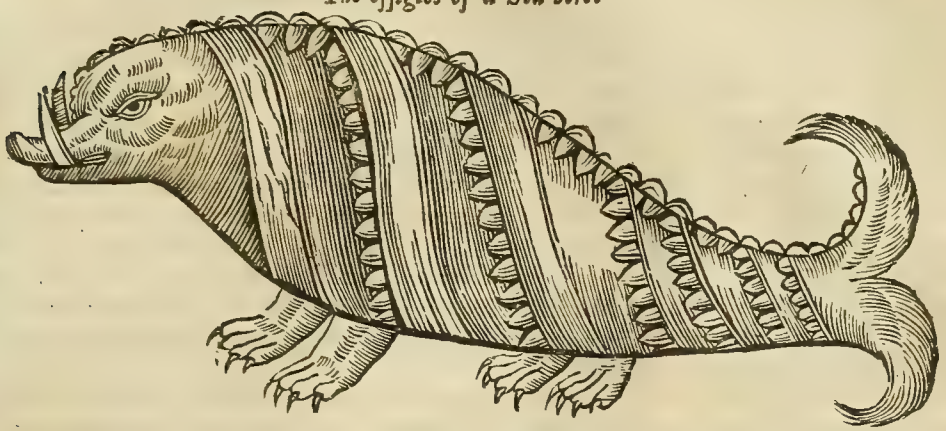
*The effigies of a monſtrous * Sea-calf.*



This

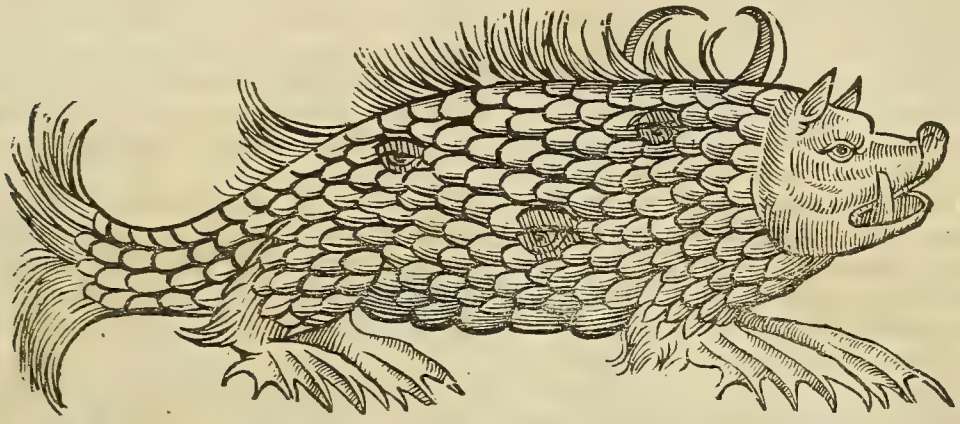
This great monſter was ſeen in the Ocean-ſea, with the head of a Bore, but longer tuſks, ſharp and cutting, with ſcails ſet in a wonderful order, as you may ſee by this figure.

*The effigies of a Sea-bore.*



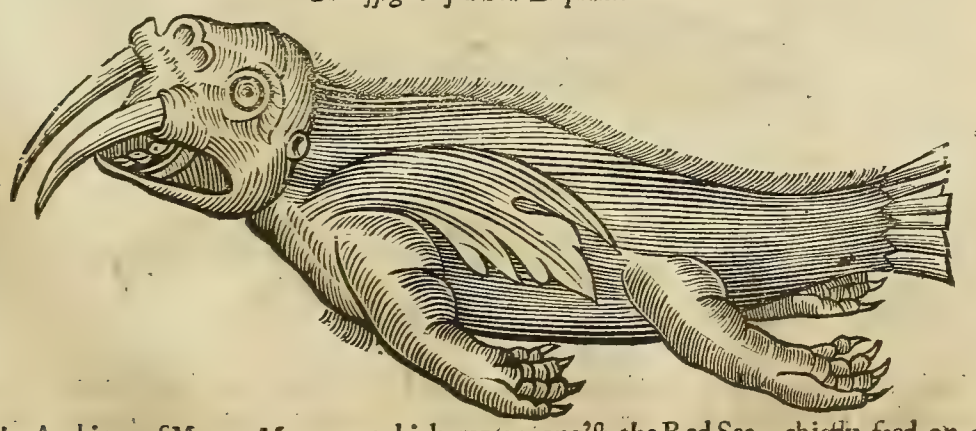
*Olaus Magnus* writes that this monſter was taken at *Thyle* an Iſland of the North, *Anno Dom.* 1538. it was of a bigneſs almoſt incredible, as that which was ſeventie two foot long, and fourteen high, and ſeven foot between the eies: now the liver was ſo large that there with they filled five hogſheads, the head reſembled a ſwine, having as it were a half-Moon on the back, and three eies in the mid'ſt of his ſides, his whole bodie was ſcalie.

*The effigies of a monſtrous Sea-Swine.*



The Sea-Elephant, as *Hector Boëtius* write's in his deſcription of *Scotland*; it is a creature that live's both in the water and aſhore, having two teeth like to Elephants, with which as oft as hee deſire's to ſleep, hee hang's himſelf upon a rock, and then hee ſleep's ſo ſoundly, that Mariners ſeeing him at ſea, have time to com aſhore and to binde him, by caſting ſtrong ropes about him. But when as hee is not awaken'd by this means, they throw ſtones at him, and makes a great noiſ; with which awakned, hee endevour's to leap back into the ſea with his accuſtomed violence, but findeing himſelf faſt, hee grow's ſo gentle, that they may deal with him as they pleaſ. Wherefore they then kill him, take out his fat and divide or cut his skin into thongs, which becauſ they are ſtrong and do not rot, are much eſteemed of.

*The effigies of a Sea-Elephant.*



The Arabians of Mount *Mazovan*, which run's along'ſt the Red Sea, chiefly feed on a fiſh called *Orobone*, which is verie terrible and much feared by other fiſh, beeing nine or ten foot long, and of the breadth agreeable thereto, and it is covered with ſcales like a Crocodile

A Crocodile is a vaſt creature, comming ſomtimes to bee fifteen cubites long, and ſeeing it is a creature that doth not bring forth young, but eggs, it uſeth at the moſt to laie ſom ſixtie eggs, no bigger then Gooſe eggs, riſeng to ſuch bigneſs from ſo ſmall beginnings (for the hatched young one is proportionable to the egg) ſhee is verie long-lived.

It hath ſo ſmall and uſeleſs a tongue, that it may ſeem to have none at all. Wherefore ſeeing it live's both on land and water; as it live's on land it is to bee taken for a tongue, but as it live's part of the life in the water it hath no uſe of a tongue, and therefore is not to bee reputed one. For fiſhes either wholly want tongues, or elſ have them ſo impedite and bound, that they ſerv for little uſe. The Crocodile onely of all other things moov's the upper jaw, the lower remaining unmovable: for her feet, they are neither good to take nor hold anie thing; ſhee hath eies not unlike thoſe of ſwine, long teeth ſtanding forth of the mouth, moſt ſharp claws, a ſcailie skin, ſo hard that no weapon can pierce it. Of the land-Crocodile (reſembling this both land and water one) is made the medicine *Crocodilea*, moſt ſingular for ſore eies, beeing annointed with the juice of leeks, it is good againſt ſuffuſions or dimneſs of the ſight; it take's away freckles, puſtles, and ſpots; the Gall annointed on the eies help's Cataracts, but the bloud clear's the ſight.

The Crocodile onely moov's the upper jaw.

*Expende diligenter Plinii locum lib. 28. c. 8*

*Thevet* ſaith they live in the fountains of the river *Nilus*, or rather in a lake flowing from the ſame fountains, and that hee ſaw ſom that were ſix paces long, and a yard croſs the back, ſo that their verie looks were formidable. They catch them thus; when as the water of *Nilus* fal's, the Egyptians let down a line, haveing thereto faſtened an iron hook of ſom three pound waight, made verie large and ſtrong, upon this hook they put a piece of fleſh of a Camel or ſom other beaſt; which when as hee ſee's, hee preſently fal's upon it, and devour's it hook and all, wherewith when hee finde's himſelf to bee cruelly pulled and pinched, it would delight you to ſee how hee fret's and leap's aloft; then they draw him thus hooked, by little and little to the ſhore, and faſten the rope ſurely to the next tree, leſt hee ſhould fall upon them that are about him; then with prongs, and ſuch things they ſo belabor his bellie, whereas his skin is ſoft and thin, that at length they kill him, and uncaſeing him, they make readie his fleſh, and eat it for delicious food. *John Lereus*, in his hiſtorie of *Braſil*, write's, that the Salvages of that countrie willingly feed upon Crocodiles, and that hee ſaw ſom who brought into their houſes young ones, wherewith their children gathering about it, would plaie without receiving anie harm thereby.

*Cosmograph tom. 1. l. 2. c. 8.*

How they take Crocodiles.

*Cap. 10.*

True (ſaith *Plinie*) is that common opinion, Whatſoever is brought forth in anie part of Nature, that alſo is in the ſea, and manie other things over and above, that are in no other place. You may perceiv that there are not onely the reſemblances of liveing creatures, but alſo of other things; if you look upon the ſword, ſaw, cucumber, like in ſmel and color to that of the earth, that you may leſs wonder at the Sea-feather and grape, whoſe figures I have here given you out of *Rondeletius*.

*Lib. 9. cap. 2.*

The ſea-feather is like thoſe feathers of birds, which are worn in hats for ornament, after they are trimmed and dreſt for that purpoſe. The fiſhermen call them ſea-pricks, for that one end of them reſembleth the end of a man's yard, when the prepuce is drawn off it. As long as it is alive it ſwel's, and becom's ſomtimes bigger and ſomtimes leſſer; but dead, it becom's verie flaccid and lank: it ſhine's bright on the night like a ſtar.

You may by this gather, that this which wee here expreſs is the Grape whereof *Plinie* mak's mention, becauſ in the ſurface and upper part thereof it much reſemble's a fair bunch of Grapes; it is ſomwhat longiſh, like a mis-ſhapen club, and hang's upon a long ſtalk. the inner parts are nothing but confuſion, ſomtimes diſtinguiſhed with little glandules, like that wee have here figured alone by it ſelf.

*The figures of the Sea-Feather and Grape.*

In the Sea near the Iſland *Hiſpantola* in the Weſt Indies, there may bee ſeen manie monſtrous fiſhes, amongſt which *Thevet* in his Coſmographie thought this moſt rare and obſervable, which in the vulgar language of the natives is termed *Aloes*. For it is juſt like a gooſ, with a long and ſtraight neck, with the head ending ſharp, or in a Cone, not much unlike a

ſugar-

ſugar-pear, it is no bigger than a gooſ, it wanteth ſcails, it hath foure fins under the bellie for ſwimming, when it is above water you would ſaie that it were a gooſ.

The Sarmatian, or Eaſtern Germane Ocean contain's fiſhes unknown to hot countries, and verie monſtrous. Such is that which reſembling a ſnail, equal's a barrell in magnitude of bodie, and a ſtag in the largeneſs and branches of her horns: the ends of her horns are rounded as it were into little balls, ſhineing like unto pearls, the neck is thick, the eies ſhineing like unto little candles, with a roundiſh noſe ſet with hairs like to a cat's, the mouth wide, whereunder hang's a piece of fleſh verie uglie to behold. It goe's on foure legs, with ſo manie broad and crooked feet, the which with a long tail, and variegated like a Tiger, ſerv's her for fins to ſwim withal. This creature is ſo timerous, that though it be an *Amphibium*, that is, which live's both in the water and aſhore, yet uſually it keep's it ſelf in the ſea, neither doth it com aſhore to feed, unleſs in a verie clear ſeaſon. The fleſh thereof is verie good and grateful meat, and the bloud medicinable for ſuch as have their livers ill affected, or their lungs ulcerated, as the bloud of great Tortoiſes is good for the Leproſie. *Thevet* in his Coſmographie affirmeth that hee ſaw this in *Denmark*.

The bloud of great Tortoiſes good for the leproſie. *Tom.2.lib.20.*

In a deep lake of freſh water, upon which ſtand's the great cittie or town of *Themiſtitan*, in the Kingdom of *Mexico*, which is built upon piles, like as *Venice* is, there is found a fiſh of the bigneſs of a calf, called by the Southern Salvages, *Andura*, but by thoſe of the place, and the Spaniards the conquerers of that place, *Hoga*. It is headed and eared almoſt like a ſwine; from the chaps hang five long bearded *appendices*, or the length of ſom half a foot, like the beard of a Barbel. It hath fleſh verie grateful and good to eat. It bringeth forth live young like as the Whale. As it ſwim's in waters, it ſeem's green, yellow, red, and of manie colors, like a Chameleon: it is moſt frequently converſant about the ſhore-ſides of the lake, and there it feed's upon the leavs of the tree called *Hoga*, whence alſo the fiſh hath its name. It is fearfully toothed and fierce fiſh, killing and devouring ſuch as it meeteth withal, though they bee bigger then her ſelf: which is the reaſon why the Fiſhermen chiefly deſire to kill her, as *Thevet* affirmeth in his Coſmographie.

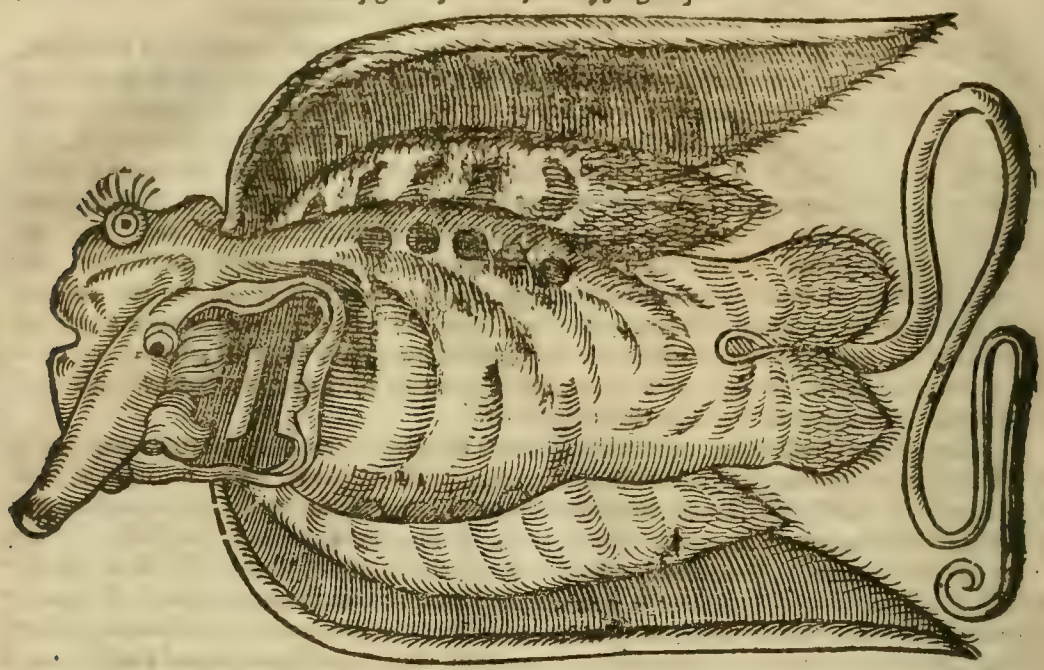
*The monſtrous fiſh* Hoga.

*Andrew Thevet* in his Coſmographie write's that as hee ſailed to *America*, hee ſaw infinite ſtore of flying fiſhes, called by the ſalvages *Bulampech*, who riſing out of the water, flie ſom fiftie paces, eſcaping by that means from other greater fiſh that think to devour them.

This kinde of flying fiſh exceed's not the bigneſs of a Mackrel, is round headed, with a blewiſh back, two wings which equal the length of almoſt all their bodie. They oft-times flie in ſuch a multitude, that they fall foul upon the ſails of ſhips, whileſt they hinder one another's fflight, and by this means they fall upon the decks, and becom a preie to the ſailers: which ſame thing wee have read confirmed by *John Lereus* in his hiſtorie of *Breſil*.

In the Venetian gulf, between *Venice* and *Ravenna*, two miles above *Quioza*, *Anno Dom.* 1550. there was taken a flying fiſh, verie horrible and monſtrous, beeing four foot long, it had a verie great head, with two eies ſtanding in a line, and not one againſt another, with two ears, and a double mouth, a ſnout verie fleſhie and green, two wings, five holes in her throat, like thoſe of a Lampreie, a tail an ell long, at the ſetting on whereof there were two little wings. This monſter was brought alive to *Quioza*, and preſented to the chief of the cittie, as a thing whereof the like had not been formerly ſeen.

*The figure of a monstrous flying Fish.*



There are so manie and different sorts of shels to bee found in the Sea, that it may bee truely said, that Nature, the hand-maid of the Almightie, disport's it self in the frameing of them. In so great diversitie I have chiefly made choice of three to treat of here, as those that are worthie of the greatest admiration. In these lie hid certain little fishes, as snails in their shels, which *Aristotle* cal's *Cancelli*, and hee affirmeth them to bee the common companions of the * crusted and shell fishes, as those which in their *species* or kinde are like to Lobsters, and use to bee bred without shels; but as they creep into shels, and there inhabit, they are like to shell fishes. It is one of these that is termed the Hermite. Hee hath two somwhat long and slender horns, under which are his eies, alwaies standing out of his head, as those which hee cannot pluck and draw in, as Crabs can. His fore-feet have claws upon them, wherewith hee defend's himself, and carrie's meat to his mouth, haveing two other on each side, and a third beeing lesser, the which hee useth in going. The female laie's eggs, which hang forth at her back part as if they were put upon a thread, beeing joined together by certain little membranes. Lastly, in the opinion of *Ælian*, the *Cancellus* or small Craie-fish is born naked and without a shell, but within a while after, shee of manie which shee finde's emptie, make's choice of a fit one, and when as grown bigger, shee cannot bee contained or dwell anie longer therein, or elf beeing stimulated with a natural desire of copulation, shee remoov's into a more capacious and convenient one. These little Craie-fishes oft-times fight together for their habitation, and the stronger carrie's away the emptie shell, or elf make's the weaker to quit possession. Now the shell is either of a *Nerita*, or *Turbo*, and oft-times of a small Purple; and entring into possession, shee carrie's it about, there feed's and grow's, and then seek's a more capacious one, as *Aristotle* saith in the formerly-cited place.

*4. de hist. anim. cap. 4.*

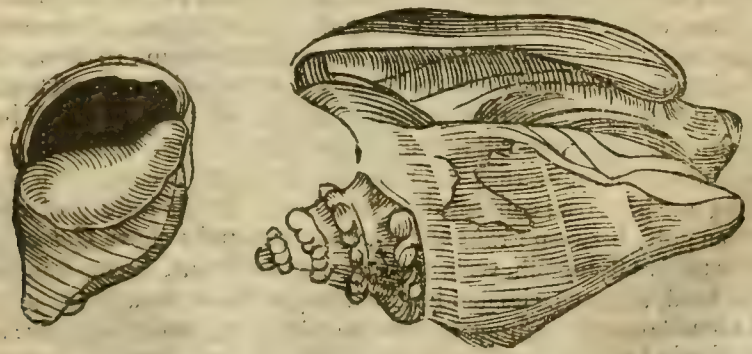
* By crusted is meant Crabs, Lobsters, Shrimps, and such like.

The description of the Hermite cray-fish.

*Lib. 7. cap. 31.*

They change their habitation for two causes.

*The effigies of the emptie shel's whereinto the* Cancelli *use to creep to dwell.*



What the *Pinnoter*, or dwarf-crab is.

Som think that this Bernard the Hermit is that kinde of *Cancellus* which is by *Plinie* termed *Pinnoter*; but in truth the *Pinnoter* is not a kinde of *Cancellus*, or Cray-fish, but of a little Crab. Now in *Aristotle* there is much difference between *Cancellus* and *Cancer parvus*, though *Plinie* may seem to confound them; for hee is bred naked, haveing his crust onely, but without a shell: wherefore seeing that by nature hee want's it, hee diligently searche's for it, and dwell's in it, when as hee hath found it: But the *Pinnoter* is not bred by it self alone, but in *Pinnæ* and som others, and hee changeth not his habitation, becaus (as *Aristotle* think's

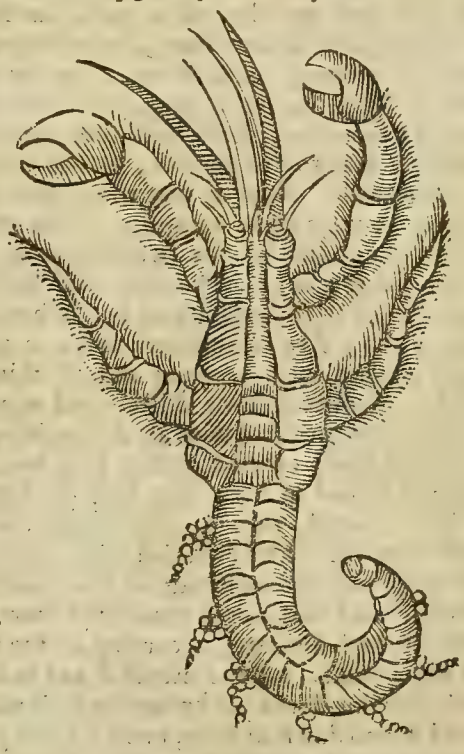
think's) beeing of the kinde of dwarf-Crabs, it never grow's big, neither dwell's it in emptie shells. Now the *Pinna*, or Pin is a kinde of shell-fish, it breed's in muddie places, and is alwaies open, neither is it at anie time without a companion, which they therefore call the *Pinnoter*, or *Pinnophylax*, (*i.e.*) the Pin-keeper, as *Plinie* saith. Verily that these things are thus, you may plainly perceiv by these words of *Athenæus*. *Chrysippus Solensis* 5. *de Honest. & Volupt.* saith the *Pinna* and *Pinnoter* assist and further each other, neither can they live asunder. The *Pinna* may bee referred to the kindes of oisters, but the *Pinnoter* is a dwarf-crab: the *Pinna* open's her shell for the little fishes to enter thereinto; the *Pinnoter* stand's by, observing if anie com in, which if they do, hee give's the Pin notice thereof by biteing, who presently thereupon shut's her shell, and so they feed together upon that they catch by this means. Thus *Athenæus*. Shee is also for this her craft mentioned by *Plutarch* in his writeings. The *Pinnoter* is somtimes called by *Plinie*, *Cancer dapis affectator*.

What the *Pinna* is. *Lib. 9. cap. 42.* *Lib. 3. Deipno.*

The familiaritie and craft of the *Pinna* and *Pinnoter*.

But that which by these authors is attributed to the dwarf-Crab, the same by *Cicero* is ascribed to the little shrimp: Now the *Pinna* (saith hee) opening her two large shells, enter's into confederacie with the little shrimp for getting of food, wherefore when little fishes swim into her gapeing shell, then the *Pinna*, admonished by the shrimp's biteing her, shut's her shell; thus two unlike creatures get their livings together. But *Plutarch* seem's to make the *Pinna* to bee the Pearl-oister, in that work of his, whereas hee inquireth whether the craft of Water or Land-beasts bee the greater. *Lib. 2. de nat. deorum.*

*The figure of him out of his Cell.*



*The effigies of* Bernard *the Hermite housed in his shell.*

But amongst the most miraculous fishes may fitly bee placed the *Nautilos*, or Sailer, of som called *Pompylos* (it is thought to bee a kinde of *Polypus*) it com's with the face upwards to the top of the Sea, raising it self by little and little, that casting forth all the water by a pipe, as if it had a Pump, it easily float's; then putting back the two first tendrils or arms, it extend's between them a membrane of wondrous fineness or thinness, which gathering air like as a sail, and shee rowing with the rest of her arms, shee guid's her self with her tail in the mid'st, as a Rudder. Thus shee sail's along in imitation of Pinnaces, and if anie thing affright her, shee presently take's in water, and sink's her self. *Plin. lib. 9. cap. 29.*

*The shape of* Nautilos, *or Sailer-fish*

The

How the Whale may be reckoned amongſt monſters.

The better to ſtore this Treatiſe of Monſters, abuſing the name with the Poëts, wee will reckon up the whale amongſt the Sea-monſters, by reaſon of his monſtrous and wondrous magnitude. Now the Whale is the greateſt by much of all the fiſhes of the Sea, for moſt commonly this beaſt is thirtie ſix cubits long, eight high, the ſlit of his mouth is eighteen foot long, teeth they have none, but in ſtead thereof in each Jaw hornie black excreſcences or fins [which wee vulgarly term Whale-bones] which by little and little end in ſmall hairs like to a ſwine's brittles, which comming and ſtanding out of his mouth, are in ſtead of Guides, leſt whileſt hee ſwim's with a blinde and rapid violence, hee might run againſt a rock. His eies are diſtant one from the other the ſpace of four ells, which outwardly appear ſmall, but inwardly they are bigger then a man's head; wherefore they are deceived that ſaie that they are no bigger then an Ox's eies: his noſe is ſhort, but in the middle of his fore-head hee hath a pipe whereat hee draw's in the air, and caſt's forth a whole ſhower or river of water, that therewith hee will even ſink the veſſels or boats of Mariners; when hee hath filled himſelf beyond meaſure, hee crie's out or roar's with ſo great or ſtrong a voice, that hee may bee heard two miles off. Hee hath two verie large fins upon his ſides wherewith hee ſwim's, and under which in the time of danger hee hide's his young; hee hath none upon his back. His tail in ſite is like to the tails of Dolphins, neither is it much unlike in ſhape, which when hee moov's, hee ſo toſſeth the Sea, that hee drown's and overturn's the boats that hee toucheth. You may by diſſecting them finde that a Whale bring's forth live-young, and give's them ſuck; for the male hath teſticles and a yard, but the female a womb and dugs. They are taken in divers places about winter, but chiefly about the coaſt of *Aquitane*, at a ſmall town which is vulgarly called *Biarris*, ſom ſix miles diſtant from *Bayon*: whereunto I beeing ſent by King *Charls* the ninth when hee was at *Bayon*, to cure the Prince of *Roche Sur-You*, I was an eie-witneſſe how they are caught; and alſo I confirmed that which I had formerly read to that purpoſe, in that excellent and moſt true hiſtorie of fiſhes ſet forth by *Rondeletius*. Now at that town there is a little hill, in the top whereof there is a Tower of verie great antiquitie, from which as from a watch-tower they keep watch whether or no anie Whales ſwim that waie. Wherefore the watch-men from the tower, either ſeeing, or by the horrible noiſ hearing a Whale to paſs that waie, they give warning thereof to the inhabitants by the beating of Drums, and ringing a Bell: which ſign once given, they all run forthwith, as to extinguiſh the Cittie if it were on fire, beeing furniſhed with weapons and all things fitting for that purpoſe. For the people of that countrie are verie diligent and expert in catching the Whale. Wherefore in each of the boats furniſhed with all things either to aſſail or flie, there are put ten luſtie rowers, and divers others furniſhed with harping irons to ſtrike the Whale; which beeing caſt and faſtned in her, they looſ out huge long ropes faſtned to them, until ſuch time as hee bee dead, then together with the ropes, and aſſiſted by the waves of the ſea, they draw the Whale (wearied with running and laboring, and fainting by reaſon of the magnitude and multitude of his wounds, beeing in the time of their conflict diligently chaſed and driven toward the ſhore) a land; and merrily part the preie, each whereof hath his ſhare, according to the number of the irons thrown, the magnitude of the wound, and the neceſſitie and excellencie of the wounded part for life: each of their harping-irons are known by their peculiar marks. In the heat of the skirmiſh manie ſtand up and down in boats, onely for this purpoſe, to take up ſuch as chance to fall into the Sea, leſt they ſhould bee drowned. The males are caught with more difficultie, the females more eaſily, eſpecially if their young ones bee with them; for whil'ſt they linger to help and ſuccour them, they loſe the occaſion of eſcaping. The fleſh is of no eſteem, the tongue onely is commendable; for beeing verie large, and of a verie lax ſubſtance, it is poudered, and by moſt Gentlemen accounted for a daintie. The lard is diſperſed over manie countries, to bee boiled and eaten with fiſh in the time of Lent, that Gourmandizers may have ſomthing to ſerv them in ſtead of fleſh which is then forbidden. There is great ſtore of fat in them in the parts under the skin and bellie, which melted, concreet's not again, by reaſon of the ſubtiltie of the parts, they keep it to burn in lamps, and to uſe about their ſhips. The houſes of the fiſh-eaters are builded with their bones; alſo orchards in the coaſt of *Aquitane* are fenced with theſe bones. The fins that ſtand forth of their mouths, which are commonly called Whale-bones, beeing dried and poliſhed, ſerve to make buſks for women, whip-ſtaves, and little ſtaves, as alſo to ſtiffen garments. Manie make ſeats or ſtools of the *vertebræ*, or ſpondils of the back-bone.

A Whale bring's forth young, and ſuckle's them.

How they are caught.

Why the females are more eaſily caught then the males.

Whale-bone.

The

*The manner of cutting up the Whale.*

In the river *Scalde*, ten miles from *Antwerp*, *Anno Dom.* 1477. the second daie of *Julie*, there was a Whale taken, of a blackish blue color, shee had a spout hole in the top of her head, out of which shee cast great store of water: shee was fiftie eight foot long, and sixteen foot high: her tail was fourteen foot broad; from the eie to the end of her nose was som sixteen foot. Her lower jaw was six foot on each side, shee had twentie five teeth, which shee could hide in her upper jaw, there beeing holes for them, it beeing whollie toothless; for which one thing this Whale may bee judged monstrous, for that nature hath denied them teeth, and and for that in creatures that are not horned, it is so ordained by nature, that when they have teeth in their lower jaw, they should have others also in the upper to answer to them, so to chaw their meat. The longest of these teeth exceed not six inches.

There is (as *Plinie* report's) a verie small fish accustomed to live about rocks, it is called *Echeneis*, never excceeding the length of a foot; it is thought that ships go more slowly if this stick to them: wherefore the Latins have also given it a name of *Remora*, for that a ship beeing under sail with a good winde, may by the *Echeneis* seazing on her as if shee would devour her, bee staied against the Sailer's wills, and stand still as if shee were in a safe harbor. Wherefore shee is said in the Actian fight to have staied the ship of *Marcus Antonius*, hastening to go about and encourage his souldiers, so that hee was forced to enter into another ship, and thereupon *Cesar's* navie came upon them too hastily, and before they were provided. *Lib. 9. cap. 25. & lib. 32. cap. 1* The wondrous power of the *Remora*.

Shee also stai'd the ship of the Emperor *Caius*, comming from *Astura* to *Antes*, his ship of all the navie makeing no waie; neither did they long wonder at this staie, the cause beeing presently known; som forthwith leaping into the Sea to finde the cause thereof, there found her about the ship, even sticking to the Rudder, and they shewed her to *Caius*, beeing wroth that this so small a thing should stop him, and countermand the endevour of fortie Rowers.

Therefore this little fish tame's and infringe's the violence and madness of the world, and that with no labor, not without holding or anie other waie, but onely by sticking thereto. Cetainly how ever it com's to pass, who from this example of holding of ships, can doubt of anie power or effect of nature, in medicines which grow naturally? Yea, and without this example, the *Torpedo* out of the sea also may bee sufficient, who a far off, and at distance, if it bee touched with a spear or rod, will benumb even the strongest arms, and retard the feet, how ever nimble to run away. The wondrous force of the *Torpedo*.

## CHAP. XXII.

*Of the admirable nature of Birds, and of som Beasts.*

THat there bee divers things not onely in the Sea, but also in the air and earth, which by the wonderful condition of their own nature may equal that of Monsters, the onely Estrich may serv for a witness. It is the biggest of Birds, though indeed it partly resemble's a bird, and partly a beast (and it is familiar to *Africa* and *Æthiopia*) as which contrarie to the nature of beasts hath feathers, and against the custom of birds cannot flie aloft; for it hath not feathers fit to flie, but like unto hairs, yet will it out-run a horse. The natural force of the stomach in concocting is miraculous, as to which nothing is untameable: shee laie's eggs of a wondrous largness, so that they may bee framed into cups: their feathers are most beautiful, as you may perceiv by this following figure. The Estrich is between a bird and a beast. The wondrous force of her stomach.

*The*

*The figure of an Estrich.*

Anie one may easily gather of what a prodigious magnitude an Estrich is, by the greatness of his bones. three of these birds were kept at the King's charge, by the *Mareschal de Rets:* one whereof dying, it was bestowed upon mee, whereof I have with great diligence made a *Sceleton.*

*The delineation of the* Sceleton *of an Estrich.*

*A.* Shew's the head, which was somwhat thicker then the head of a Crane, of the length of one's hand, plain from the crown even to the beak; the beak being divided to the middle region of the eie, beeing roundish at the end thereof.

*B.* The

*B.* The neck, a yard long, conſiſting of ſeventeen *vertebræ*'s, each whereof on each ſide is furniſhed with a tranſverſ proceſs looking downwards, of ſom fingers length, excepting the two which are next the head, as which want theſe, and are joined together by *Ginglymos*.

*C.* The back is of a foot's length, conſiſting of ſeven *Vertebræ*.

*D.* The holie-bone of two foot long, in whoſe top there is a tranſverſ proceſs, under which there lie's a great hole.

*E.* Three more, but leſs.

*F. G. H.* After which there follow's the cavitie or ſocket, whereinto the head of the thigh-bone is received and hid. This externally and on the ſide produceth a perforated bone, noted with the letter *I.* perforated I ſaie at the beginning, for it is preſently united at the letter, *K.* then is it forked and divided into two other bones, whereof one is bigger then the other. The leſs is noted with the letter, *L.* then are they both united at the letter *M.* each of them is half a foot and four inches long. But from that part whereas they firſt begun to bee divided, to that whereas they are united, there is a hole ſom four fingers broad, but the length of one's hand, or more, and it is noted with the letter *N.* The reſidue of the bone is like to a pruning knife three inches broad, but ſix in length: at the end whereunder is the letter, *O.* it is joined by coalition.

*P.* The rump conſiſting of nine *vertebræ*'s, like to a man's. The thigh-bones are two, whereof that which is noted with the letter *Q.* is of the length of a foot, and of thickneſs equal to a horſe's thigh. The other next under (which peradventure you may call the leg-bone) noted with *R.* is a foot and half long: it hath joined thereto the *Fibula*, or leſſer focil of the length, but which grow's ſmaller as it com's lower.

*S.* Is the leg, to which the foot adhere's, being one foot and a half long, divided at the end into two claws, the one bigger, the other leſs, whereof each conſiſt's of three bones.

*T.* Eight ribs, which are inſerted into the *Sternon*, the three middlemoſt of theſe have a bonie production like to a hook.

*V.* Is the *Sternon*, conſiſting of one bone of ſom foot's length, repreſenting a buckler, to this there is joined another bone, which ſtretched over the three firſt ribs, is in ſtead of clavicles or collar-bones.

*X.* The firſt bone of the wing, which is one foot and half long.

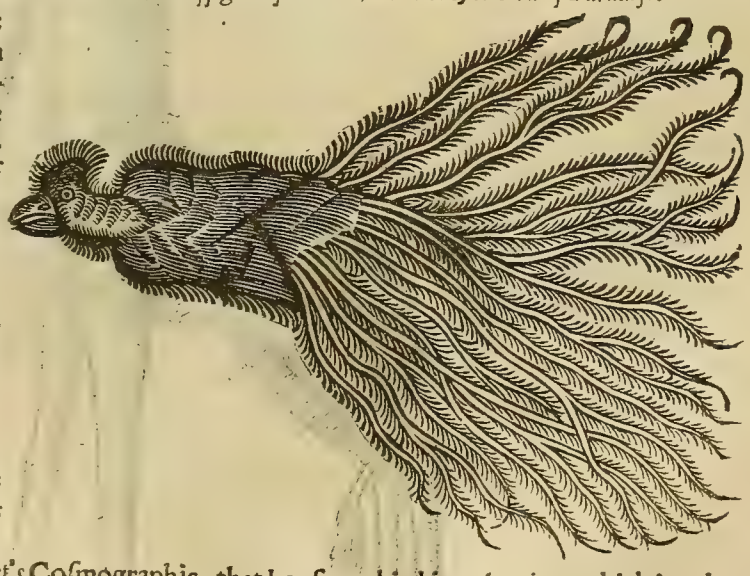
*Y.* Two bones under this, equivalent to the ell and wand, under which there are ſix other bones compoſing the point of the wing, noted with *Z.*

This whole *Sceleton* is ſeven foot long, and ſo manie foot or more high from the feet to the beak: there are manie other obſervable things in his compoſure, but I have thought fit to omitt them for brevitie's ſake.

*Jerom Cardane* in his books *De ſubtilitate*, write's, that in the Ilands of the *Molucca*'s you may ſomtimes finde lying upon the ground, or take up in the waters, a dead bird called a *Manucodiata*, that is in Hebrew, the bird of God, it is never ſeen alive. It live's aloft in the air, it is like a Swallow in bodie and beak, yet diſtinguiſhed with divers colored feathers: for thoſe on the top of the head are of a golden color, thoſe of the neck like to a Mallard, but the tail and wings like Peacocks; * it want's feet: Wherefore if it becom wearie with flying, or deſir ſleep, it hang's up the boie by twineing the feathers about ſom bough of a tree. It paſſeth through the air, wherein it muſt remain as long as it live's, with great celeritie, and live by the air and dew onely. The cock hath a cavity depreſt in the back, wherein the hen laie's and ſit's upon her eggs. I ſaw one at *Paris* which was preſend to King *Charls* the nint.

The deſcription of the bird of Paradiſe.

*The effigies of a* Manucodiata, *or bird of Paradiſe.*



* Whoſoever deſire's to know more of the truth of this bird, let him read *Clauſius* in the *Auctarium ad lib. 5 cap. 1. exoticorum.*

We have read in *Thevet's* Coſmographie, that hee ſaw a bird in *America*, which in that countrie ſpeech is called *Touca*, in this verie monſtrous and deformed, for that the beak in length and thickneſs, exceed's the bigneſs of the reſt of the bodie; it feed's on pepper, as the blackbirds and felfares with us do upon Ivie-berries, which are not leſs hot then pepper.

*Tom. 2. l. 21. cap. 12.*

A cer-

A certain Gentleman of *Provence* brought a bird of this kinde from that countrie, to present it to King *Charls* the ninth, but dying in the waie hee could not present it alive. Wherefore the King wished the *Mareschal de Rets* to give her to mee, that I might take forth her bowels and embalm her, that shee might bee kept amongst the King's rarities. I did what I could, yet not long after shee rotted: shee resembled a crow in bodie and feathers, but had a yellowish beak, clear, smooth, and toothed like a saw, and of such length and thickness as wee formerly mentioned. I keep it yet as a certain monstrous thing.

*Tom. 1. cap. 11. lib. 4.* *Thevet* write's, that in the Island *Xocotera* there is frequently found a certain wilde beast called *Hulpalis*, of the the bigness of an Ethiopian Monkie. It is a verie monstrous creature, but in nothing more, then that it is thought to live upon the air ondly; the skin, as if it were died in grain, is of a scarlet color, yet it is in som places spotted and variegated: it hath a round-head like to a boul, with feet round, broad, and wanting hurtful nails. The Moors kill it and use to eat the flesh of it, beeing first bruised, that so it may bee the more tender.

*Thevet tom 1. lib. 11. cap. 13.* In the Realm of *Camota*, of *Abob*, of *Benga*, and other mountains of *Cangipa*, *Plimatiq* and *Catagan*, which are in the inner *India*, beyond the river of *Ganges*, som five degrees beyond the Tropick of *Cancer*, is found a beast, which the Western German's call Giraff. This beast in head, ears, and cloven feet, is not much unlike our Do; it hath a verie slender neck, but it is som six foot long, and there are few beasts that exceed him in the length of their legs: his tail is round, but reacheth no further then his hams; his skin is exceeding beautiful, yet somwhat rough, having hair thereon somwhat longer then a Cow, it is spotted and variegated in som places with spots of a middle color, between white and chesnut, so as Leopards are: for which cause by som Greek Historians it is called a *Cameleopardalis*: it is so wilde before it bee taken, that with the good-will it will not so much as bee seen. Therefore it inhabite's and live's onely in desert and secret places, unknown to the rest of the beasts of that region. Hee presently flie's away at the sight of a man, yet is hee taken at length, for that hee is not verie speedie in running away; once taken, hee is as easily and speedily tamed as anie wilde beast whatsoever. Hee hath above his crown two straight horns covered with hairs, and of a foot's length. When as hee hold's up his head and neck hee is as high as a Lance. Hee feed's upon herbs and the leavs and boughs of trees; yea, hee is also delighted with bread.

*The effigies of* Giraffa.

Such

Such as ſail in the red ſea along the coaſt of *Arabia*, meet with an Iland called by the *Arabians Cademota*; in that part thereof where the river *Plata* run's, is found a wilde beaſt, called by the barbarous inhabitants *Paraſſoupi*, beeing of the bigneſs of a Mule, headed not unlike one, yet rough and haired like to a Bear, but not of ſo dark a color, but inclineing to yellow, with cloven feet like a Hart: ſhee hath two long horns on her head, but not branched, ſomwhat reſembling thoſe ſo much magnified horns of Unicorns. For the native's of the place, bitten by the venemous tooth of either beaſt or fiſh, are preſently helped and recover by drinking the water wherein ſuch horns have been infuſed for ſix or ſeven daies ſpace, as *Thevet* in his Coſmographie report's.

In one of the Iſlands of the *Molucca's* there is found a beaſt living both on land and water like as a Crocodile; it is called *Camphurch*, it is of the bigneſs of an Hart, it hath one horn in the fore-head, moovable after the faſhion of the noſe of a Turkie-cock: it is ſom three foot and an half long, and never thicker then a man's arm; his neck is covered over with an aſh color, hee hath two feet like to a goos's feet, wherewith hee ſwim's both in freſh and ſalt waters. His fore-feet are like to a ſtag's, hee live's upon fiſh. Manie have perſwaded themſelvs that this beaſt is a kinde of Unicorn, and that therefore his horn ſhould bee good againſt poiſons. The King of the Iſland love's to bee called by the name of this beaſt; and ſo alſo other Kings take to themſelvs the names of the wilde beaſts, fiſhes, or fruits, that are moſt precious and obſervable in their dominions, as *Thevet* report's.

*Mauritania* and *Æthiopia*, and that part of *Africk* that is beyond the deſerts and ſyrtes, bring forth Elephants; but thoſe of *India* are far larger. Now although in the largeneſs of their bodie they exceed all four-footed beaſts, yet may they bee more ſpeedily and eaſily tamed then other beaſts. For they may bee taught to do manie things above the common nature of beaſts. Their skin is ſomwhat like to a Buffles, with little hair upon it, but that which is, is aſh colored, his head large, his neck ſhort, his ears two handfuls broad, his noſe or trunk verie long, and hanging down almoſt to the ground, hollow like as a trumpet, the which hee uſeth in ſtead of an hand, his mouth is not far from his breaſt, not much unlike a ſwine's, from the upper part whereof two large teeth thruſt forth themſelvs, his legs are thick and ſtrong, not conſiſting of one bone as manie formerly have falſly beleeved (for they kneel to admit their Rider, or to bee laden, and then riſe up again of themſelvs) his feet are round like a quoit ſom two or three hand's bredth, and divided into five clefts. Hee hath a tail like a Buffle, but not verie rough, ſom three hand's bredth long, wherefore they would bee much troubled with flies and waſps, but that nature hath recompenced the ſhortneſs of their tails by another waie; for when they finde themſelvs moleſted, they contract their skin ſo ſtrongly, that they ſuffocate and kill theſe little creatures taken in the wrinkles thereof; they over-take a man running by going only, for his legs are proportionable to the reſt of his bodie.

The Indian Elephants are bigger then the African.

How they keep flies from them.

They feed upon the leavs and fruits of trees, neither is anie tree ſo ſtrong or well rooted, which they cannot throw down and break. They grow to bee ſixteen handfuls high, wherefore ſuch as ride upon an Elephant are much troubled as if they went to ſea. They are of ſo unbridled a nature, that they cannot endure anie head-ſtall or reins, therefore you muſt ſuffer them to take the courſ and waie they pleaſ. Yet do they obey their countrie-men without anie great trouble; for they ſeem after ſom ſort to underſtand their ſpeech, wherefore they are eaſily governed by their known voices and words. They throw down a man that anger's them, firſt taking him up with their trunk and lifting him aloft, and then letting him fall, they thread him under foot, and leav him not before hee bee dead. *Ariſtotle* write's that Elephants generate not before they bee twentie years old: they know not adulterie, neither touch they anie female but one, from which they alſo diligently abſtain when they know ſhee hath once conceived. It cannot bee known how long they go with young, the reaſon is for that their copulation is not ſeen, for they never do it but in ſecret. The females bring forth reſting upon their hinde legs, and with pain like women, they lick their young, and theſe preſently ſee and go, and ſuck with their mouths, and not with their trunks. You may ſee Elephant's teeth of a monſtrous and ſtupendious bigneſs, at *Venice*, *Rome*, *Naples*, and *Paris*; they term it Ivorie, and it is uſed for Cabinets, Harps, Combs, and other ſuch like uſes.

*Lib.9.de hiſt. anim.cap.28.*

It is not known how long an Elephant go's with young.

*The figure of an Elephant.*

Wee have read in *Thevet*, that in *Florida* there are great Bulls, called in that countrie tongue *Beautrol*, they have horns of a foot long, a bunch on their back like a Camel, their hair long and yellow, the tail of a Lion; there is scarce anie creature more fierce or wilde, for it can never bee tamed, unless it bee taken from the dam. The Salvages use their hides against the cold, and their horns as an Antidote against poison. *Tom. 2. lib. 23. cap. 2.*

Their horns good against poison.

The same author affirm's that whilest hee sailed in the red sea, hee saw a monster in the hands of certain Indian merchants, which in the bigness and shape of his limbs was not unlike a Tiger, yet had the face of a man, but a verie flat nose: besides, his fore feet were like a man's hands, but the hinde like the feet of a Tigre, hee had no tail, hee was of a dun color: to conclude, in head, ears, neck, and face it resembled a man, but in the blackish and curled hair, a Moor: for the other parts they were like a Tigre; they called it *Thanatth*. *Tom. 1. lib. 2. cap. 10.*

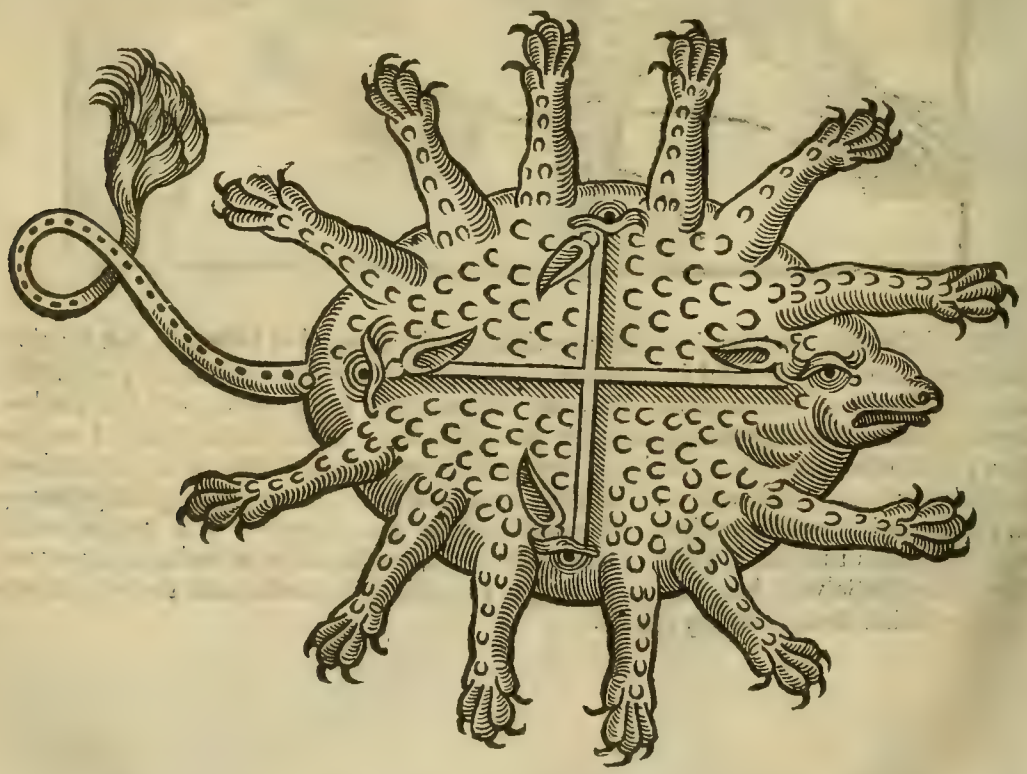
*The figure of a beast called* Thanatth.

This following monster is so strange that it will scarce bee believed, but by those that have seen it: it is bred in *America*, and by the Salvages called *Haïit*, of the bigness of a Monkie, with a great bellie, almost touching the ground, and the head and face of a childe: beeing taken, it mourn's and sigh's like to a man that is troubled and perplext; it is of an ash-color, hath the feet divided into three claws, four fingers long, and sharper then those of a Lion: it climbe's trees, and live's there more frequently then upon the ground, the tail is no longer then the bredth of three fingers. It is strange and almost monstrous that these kinde of creatures have never been seen to feed upon, or eat anie thing: for the Salvages have kept them long in their houses to make trial thereof, wherefore they think them to live by the air.

*The figure of the beast called* Haiit.

I have taken this following monster out of *Leo*'s African historie; it is verie deformed, being round after the manner of a Tortois, two yellow lines crossing each other at right angles, divide his back; at everie end of which hee hath one eie, and also one ear, so that such a creature may see on everie side with his four eies, as also hear by his so manie ears: yet hath hee but one mouth, and one bellie to contain his meat, but his round bodie is encompassed with manie feet, by whose help hee can go anie waie hee pleas without turning of his bodie, his tail is somthing long and verie hairie at the end The inhabitants affirm, that his blood is more effectuall in healing of wounds then anie balsom.

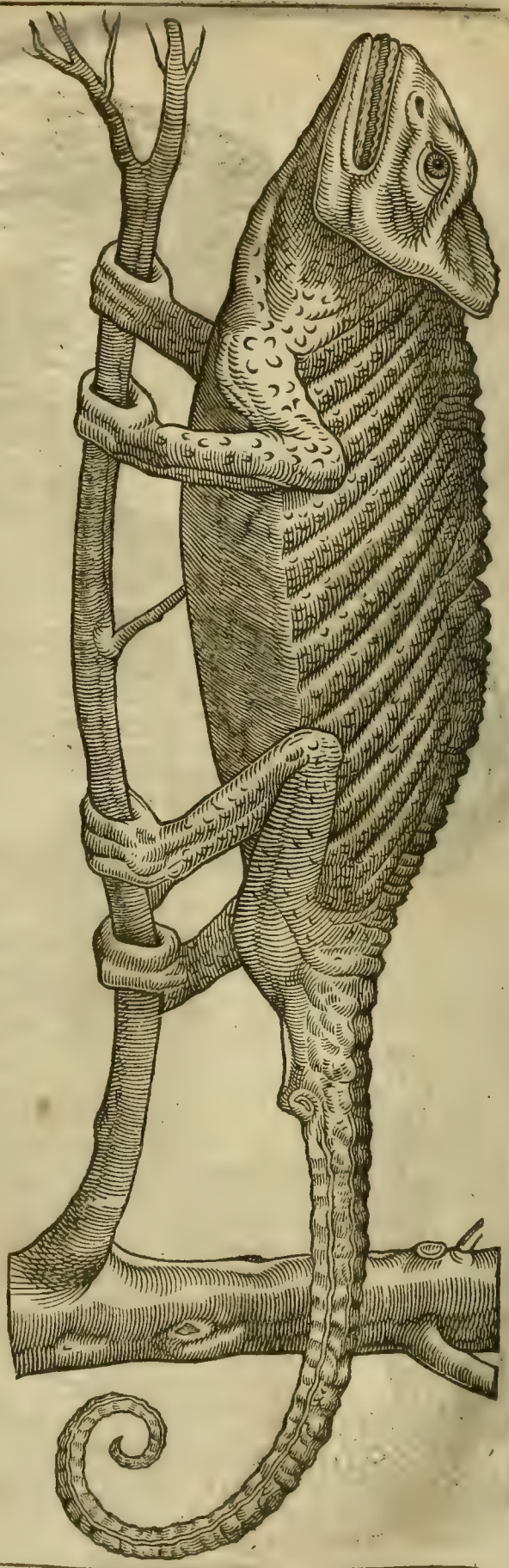
Blood as good as balsom.



It is strange that the *Rhinoceros* should bee a born enemie to the Elephant; wherefore hee whet's his horn, which grow's upon his nose, upon the rocks, and so prepare's himself for fight, wherein hee chiefly assails the bellie, as that which hee know's to bee the softest: hee is as long as an Elephant, but his legs are much shorter, hee is of the color of box, yet somwhat spotted. *Pompie* was the first, that shewed one at *Rome*.

*Plin. l. 8. c. 29.*

*The*



*The figure of the* Chameleon.

*Plin lib.8.c.33.* *Africa* produceth the *Chameleon*, yet is it more frequent in *India*: hee is in shape and greatness like a Lizard, but that his legs are straight and higher, his sides are joined to the bellie as in fish, and his back *Arist. lib.2.hist. anim.cap.12.* stand's up after the same manner, his nose stand's out not much unlike a swine's, his tail is long, and endeth sharp, and hee fould's it up in a round, like a serpent, his nails are crooked, his pace slow like as the Tortois, his bodie rough, hee never shut's his eies, neither doth hee look about by the mooving of the apple, but by the turning of the whole eie. The nature of his color is verie wonderful, for hee changeth it now and then in his eies and tail, and whole bodie beside; and hee alwaies assimilate's that which hee is next to, unless it bee red or white. His skin is verie thin, and his bodie clear; therefore the one of these two, either the color of the neighbouring things in so great subtiltie of his clear skin, easily shine's as in a glass; or elf various humors diversly stirred up in him, according to the varietie of his affections, represent divers colors in his skin, as a Turkie-cock doth in those fleshie excrescences under his throat, and upon his head: hee is pale when hee is dead. *Mathiolus* write's that the right eie taken from a living *Chameleon* take's away the white spots which are about the thornie coat of the eie; his bodie being beaten, and mixed with Goat's milk, and rubbed upon anie part, fetcheth off hairs; his gall discusseth the Cataracts of the eie.

The strange nature of the color of the Chameleon.

## CHAP. XXIII.

*Of Celestial Monsters.*

PEradventure it hath not been strange that monsters have been generated upon the earth and in the Sea: but for monsters to appear in heaven, and in the upper region of the air, exceed's all admiration. Yet have wee often read it written by the antients, that the face of heaven hath been deformed, by bearded, tailed, and haired Comets; by meteors representing burning torches, and lamps, pillars, darts, shields, troups of clouds, hostilely assailing each other; Dragons, two Moons, Suns, and the like monsters and prodigies. An-

*The figure of a fearful Comet.*

Antiquitie hath not seen anie thing more prodigious then that Comet which appeared with bloodie hair in *Uverstine*, upon the ninth daie of *October*, 1528. for it was so horrible and fearful a spectacle, that divers died with fear, and manie fell into grievous diseases; going from the East to the South, it endured no longer then one hour and a quarter: in the top whereof was seen a bending arm holding a great sword in a threat'ning hand; at the end thereof appeared three stars, but that over which the point of the sword directly hanged was more bright and clear then the rest: on each side of this Comet were seen manie spears, swords, and other kindes of weapons died with blood, which were intermixt with men's heads, haveing long and terrible hair and beards, as you may see in this figure.

Also there have been seen great and thick bars of Iron to have faln from heaven, which have presently been turned into swords and rapiers. At *Sugolia* in the borders of *Hungaria*, a stone fell from heaven with a great noise, the seventh daie of *September*, *Anno Dom.* 1514. it weighed two hundred and fiftie pound: the Citizens hanged it up with a great iron-chain put through it, in the mid'st of the Church of their Cittie, and used to shew it, as a miracle, to travellers of better note that pass'd that waie. † *Plinie* report's that clashing of armour, and the sound of a trumpet were heard from heaven often, before and after the Cimbrian war. The same author write's that in the third Consul-ship of *Marius*, the *Amarines* and *Tudortines* saw the heavenlie armies comming from East and West; and so joining, those beeing vanquished which came from the East. Which same thing was seen in *Lusalia*, at a town called *Jubea*, two hours after mid-night, *A Dom.* 1535. But in *A Dom.* 1550. upon the 19. daie of *Julie*, in *Saxonie*, not far from *Wittenburg*, there appeared in the air a great Stag, incompassed with two armed hosts, makeing a great noise in their conflict, and at the same instant it rained blood in great abundance, the sun seemed to bee cloven in two pieces, and the one of them to fall upon the earth. A little before the takeing of *Constantinople* from the Christians, there appeared a great armie in the air appointed to fight, attended on with a great companie of dogs and other wild beasts. *Julius Obsequius* report's that in *A.Dom.* 458. it rained flesh in *Italie*, in greater and lesser pieces, part of which were devoured by the birds before they fell upon the earth: that which fell upon the earth kept long unputrefied, and unchanged in color and smel. *A.Dom.* 989. *Otho* the third being Emperor, it rained corn in *Italie*. *A.D.* 180. it rained milk and oil in great abundance, and fruit-bearing trees brought forth corn. *Lycosthenes* tel's that in the time of *Charls* the fifth, whil'st *Maidenberg* was besieged, three suns first appeared about 7. a clock in the morning, and then were seen for a whole daie whereof the middlemost was the brightest, the two others were reddish, and of a bloodie color; but in the night time there appeared three Moons. The same appeared in *Bavaria*, *An. Dom.* 1554.

L. 2. c. 57.

Presages of the takeing of *Constantinople*.

Monstrous rains.

But if so prodigious and strange things happen in the heavens besides the common order of nature, shall we think it incredible that the like may happen in the earth? *An. Dom.* 542. the whole earth quaked, mount *Ætna* cast forth flames and sparks of fire, with which manie houses of the neighbouring villages were burn'd. *An. Dom.* 1531. in *Portugal* there was an earthquake for eight daies, and it quaked seven or eight times each daie; so that in *Lisbone* alone it cast down a thousand and fiftie houses, and more then six hundred were spoiled. *Ferrara* lately was almost wholly demolish'd by a fearful earthquake. Above all which ever have been heard is that prodigie which happened in the time of *Plinie*, at the death of *Nero* the Emperor in the *Marucine* field, the whole Olive-field of *Vectius Marcellus* a Romane Knight going over the high waie, and the fields which were against it comming into the place thereof. Why should I mention the miracles of waters, from whose depth and streams, fires and great flames have oft broke forth? They tell out of St. *Augustine*, that the fire of the sacrifice, which for those seventie years of the Babylonian captivitie endured under the water, was extinguished, *Antiochus* selling the priest-hood to *Jason*. What miracle is this, that the fire should live in the water, above its force and natural efficacie, and that the water should forget the extinguishing facultie! Verily Philosophers truely affirm that the elements, which are understood to be contrarie, and to fight in varietie among themselvs, are mutually joyned and tied together by a marvellous confederacie.

Earth quakes.

Lib. 2. cap. 73.

*The end of the Twentie fifth Book.*

# OF THE Faculties of Simple MEDICINES, AS ALSO Of their Compoſition and Uſe.

## The Twentie ſixth Book.

### The PREFACE.

*AMongſt the cauſſes which wee term healthful, and other remedies which pertain to the health of man, and the expelling of Diſeaſes, Medicines eaſily challenge the prime place; which (as it is delivered by* Solomon) *God hath produced out of the earth, and they are not to bee abhorred by a wiſe man; for there is nothing in the world, which ſooner, and as by a miracle, aſſwageth the horrid torments of diſeaſes. Therefore* Herophilus *called them fitttingly adminiſtred,* The hands of the Gods. *And hence it was that ſuch Phyſicians as excelled in the knowledg of Medicines, have amongſt the Antients acquired an opinion of Divinitie. It cannot by words bee expreſſed what power they have in healing. Wherefore the knowledg of them is verie neceſſarie not onely for the prevention, but alſo for the driveing away of Diſeaſes.*

The excellencie of medicines.

### CHAP. I.

*What a medicine is, and how it differeth from nouriſhment*

WEE define a medicine to bee, That which hath power to change the bodie according to one or more qualities; and that ſuch as cannot bee changed into our nature: contrarie whereto wee term that nouriſhment which may bee converted into the ſubſtance of our bodies. But wee define them by the word *power*, becauſ they have not an abſolute nature, but as by relation and depending upon the condition of the bodies by whom they are taken. For that which is medicine to one, is meat to another, and that which is meat to this, is medicine to that. Thus for example, Hellebore is nouriſhment to the Quail, but a medicine to man: Hemlock is nouriſhment to a Sterling, but poiſon to a Gooſ: the *Ferula* is food to an Aſs, but poiſon to other cattel. Now this diverſitie is to bee attributed to the different natures of creatures.

It is recorded in hiſtorie, that the ſame by long uſe may happen in men. They report that a maid was preſented to *Alexander* the Great, who nouriſhed with *Napellus*, and other poiſons, had by long uſe made them familiar to her, ſo that the verie breath ſhee breathed was deadlie to the by-ſtanders. Therefore it ought to ſeem no marvail, if at anie time it happen, that medicines turn into the nature and nouriſhment of our bodies: for wee commonly may ſee birds and ſwine feed upon ſerpents and toads without anie harm: and laſtly,

*----------Serpenti Ciconia pullos*
*Nutrit, & per devia rura lacerta:*
*Illi eadem ſumptis quærunt animalia pennis.*

The Stork with Serpents and with Lizards caught,
In waieleſs places nouriſheth her brood:
And they the ſame purſue, when as they 're taught
To uſe their wing, to get their wiſh'd-for food.

### CHAP. II.

*The differences of Medicines in their matter and ſubſtance.*

EVen as the concealed glorie of worldlie riches lieth hid in the bowels of the earth, and depths of the ſea and waters, as gold, ſilver and all ſorts of metals, gemms and pretious ſtones, furniſh'd with admirable virtues; ſo wee may behold the ſuperficies of this earth clothed with almoſt an infinite varietie of trees, ſhrubs, and herbs: where wee may contemplate and wonder at the innumerable diverſities of roots, leavs, flowers, fruits, gums, their ſmels, pleaſant taſts and colors, but much more at their virtues. This ſame mother-earth, as with her breaſts, nouriſheth marvellous diſtinct kindes of liveing creatures, various in their ſpringing, encreaſ and ſtrength. Wherein the immenſ goodneſs of God, the great Architect and framer of all things, doth moſt clearly appear towards man, as who hath ſubjected to our government, as a patrimonie, ſo ample and plentiful proviſion of nature for our delight in nouriſhment and neceſſitie of healing. Therefore the antient Phyſicians have right-

The earth the mother of riches and medicines

rightly delivered, that all ſorts of medicines may bee abundantly had from liveing creatures, plants, the earth, water and air.

Medicines are taken from liveing creatures either whole and entire, or elſ the parts and excrements of them. Wee ofttimes uſe in Phyſick whole creatures, as foxes, whelps, hedg-hogs, frogs, ſnails, worms, crabs, and other living creatures. Wee alſo make uſe of ſom parts of them, as the liver of a Wolf or Goat, the lungs of the fox, the bone of the ſtags heart, *Cranium humanum*, fat, blood, fleſh, marrow, the cods of the *Caſtor* or Beaver, which, is therefore termed *Caſtoreum*, and ſuch other particles that are uſeful in Phyſick. Wee know alſo that there are ſom medicines taken from excrements, as horns, nails, hairs, feathers, skin; as alſo from urine, dung, ſpittle, honie, eggs, wax, milk, wool, ſweat, and others of this kinde, under which wee may comprehend muſk, civet, pearl, *æſipus*, and ſundrie others of this nature. What medicines taken from liveing creatures.

Wee take medicines from plants, both whole, and alſo from their parts, whether trees, ſhrubs, or herbs. For we oft-times uſe ſuccorie, marſh-mallows, mallows, plantain, and the like, whole: but otherwhiles onely the roots of plants, their pith, wood, bark, ſhoots, ſtalks, leavs, flowers, ſeeds, fruits, juices, gums, roſines, moſſes, and the like. What from plants.

Things taken from the earth for the uſe and matter of medicine, are either earths, ſtones, or Minerals. The ſorts of earth are Bole-Armenick, *Terra ſigillata*, fuller's-earth, chalk, potters claie, and ſuch like. Stones, are the pumice, Marchiſite of gold, ſilver, braſs, marble, the load-ſtone, plaiſter, chalk, *ſulphur vivum*, *lapis ſpecularis*, and others. Metals and Minerals are gold, ſilver, tin, lead, braſs, iron, ſteel, antimonie, ceruſe, brimſtone, Cinnaber, litharge of gold and ſilver, tuttie, true *Pompholix*, verdigreece, alum, romane vitriol, copras white and green, ſalts of ſundrie kinds, both of Arſenicks, and ſuch like. What from the earth.

The following medicines are from freſh water, rain-water, ſpring-water, river-water, and all things thence ariſeing, as water-lentile, common flags, water-lilies, water-mints, and all the creatures that live therein. From the ſalt-water are taken ſalt, *Alcyonium*, all ſorts of coral, ſhels of fiſh, as alſo cuttle-bones, ſponges, and all creatures of the ſea. From waters mixt of ſalt and freſh, the herb *Androſace* (which grow's in plentie in the marſhes at *Fontignan* and *Cape de Sete*) *Aſphaltum*, which is found in the dead ſea. What from the water.

From the air proceed's *Manna*, therefore called *mel-ærium* (*i. e.*) honie of the air, and alſo all other kindes of dew that are uſeful in Phyſick, by reaſon of the virtues they receiv from the ſun which raiſeth them up; from the air, whereas they make ſom ſtaie; as alſo from the plants, whereupon they fall and reſide. What from the air.

## CHAP. III.

### *The differences of ſimples in their qualities and effects.*

ALL the mentioned ſorts of ſimples are indued with one or more of the four faculties, whereof I now purpoſe to treat.

The firſt facultie common to all the reſt, and as it were their foundation, flow's from the four firſt qualities of the prime bodies or elements, that is heat, coldneſs, drineſs, and moiſture, and this either ſimple or compound, as one or two of theſe prime qualities exceed in the temper of the medicine, as may appear by this following.

The *ſimple* qualitie is either to Heat, Cool, Humect, Drie.

The *compound*, ariſeing from two joined qualities, either Heat's and drie's, Heat's and moiſten's, Cool's and drie's, Cool's and moiſten's.

*Heat* moderate, Heat's, Attenuate's, Rarifie's, Open's the paſſages, Digeſt's, Suppurate's. Immoderate, Inflame's and burn's, Bite's, whence follow's Violent attraction, Rubrification, Conſumption, Colliquation, An eſchar, Mortification.

*Cold* moderate, Cooleth, Condenſeth, Obſtructeth. Immoderate, Congeal's, Stupifie's, Mortifie's.

*Moiſture* moderate. Humect's, Lubricate's, Levigate's and mitigate's, Glue's. Immoderate, Obſtruct's, lift's up into a flatulent tumor, eſpecially if it bee a vaporous humiditie.

*Drineſs* moderate, Drie's, Rarifie's, Attenuate's. Immoderate, Binde's, Contract's or ſhrink's, Cauſſeth chops and ſcails.

The effect of theſe qualities is diſtinguiſhed, and as *Galen* obſerv's digeſted into theſe orders, which wee term Degrees, ſo that by a certain proportion and meaſure, they may ſerv to oppugn diſeaſes, as the ſame *Galen* affirm's. For to a diſeaſ (for example) hot in the ſecond degree, no other medicine muſt bee uſed then that which is cold in the like degree: Wherefore all ſimple medicines are Hot, Cold, Moiſt, or Drie; in the beginning, middle, or extreme, of the firſt, ſecond, third, or fourth degree. *1. ſimp. & 1. de aliment.*

The Heat, Coldneſs, Moiſture, Drineſs, of the firſt, ſecond, third, fourth degree; is either Obſcure, Manifeſt, Vehement or Exceſſive.

An

Examples of the degrees of heat.

An example of heat diſtinguiſhed thus by degrees, may bee thus; Warm water is temperate; that which is a little hotter, is in the firſt degree of heat; if manifeſtly hot, it is in the ſecond degree; but if it heat more vehemently, it may bee thought to com to the third; but if it ſcald, then wee know that it hath arrived to the fourth degree of heat. Such alſo is the diſtinction of coldneſs, moiſture, and drineſs by degrees. Wherefore it will bee worth our labor, to give you examples of certain medicines, diſtinguiſhed in their order and degree, by which you may the more eaſily give conjecture of the reſt.

Simple Medicines hot in the

Firſt degree. *Abſinthium. Althæa. Amygdala dulcia. Beta. Braſſica. Chamæmelum. Ladanum. Semen Lini. Saccarum. Ervum, ſive Orobus. Vinum novum:* Forold is judged hot in the ſecond or third degree, as it is more or leſs years old.

Second degree. *Ammoniacum. Arthemiſia. Anethum. Fœnugræcum. Maſtiche. Salvia. Marrubium. Meliſſa. Apium. Chamæpytis. Crocus. Ficus. Thus. Myrrha. Mel. Nux moſchata. Pix utraque tum arida corporibus particuliſque ſolidioribus aptior, tum liquida delicatioribus. Scilla. Sarcocolla. Bryonia. Sal. Opopanax. Ammi.*

Third degree. *Abrotanum. Agnus caſtus. Aniſum. Aſarum. Ariſtolochia. Chamædrys. Sabina. Calamintha. Cinnamomum. Iris. Juniperus. Hyſſopus. Origanum. Sagapenum. Chelidonium majus. Ruta ſaliva.*

Fourth degree. *Allium. Cæpa. Euphorbium. Naſturtium. Pyrethrum. Sinapi Tithymalli. Anacardi. Chelidonium minus, Galeno.* Yet ours, by reaſon of the gentleneſs of the air, and moiſture of our ſoil, is not ſo acrid. *Ruta ſylveſtris.* This, as all wilde and not cultivated things, becom's more ſtrong and acrid then the Garden-Rue.

Simples cold in the

Firſt degree. *Atriplex. Hordeum. Cydonia mala. Malva. Pyra. Pruna. Roſa. Viola.*

Second degree. *Acacia. Cucurbita. Cucumis. Mala granata acida, dulcia enim temperata ſunt potiùs. Plantago. Polyganum. Solanum hortenſe; nam id quod ſomniferum dicitur, vi refrigerandi ad papaver accedit.*

Third degree. *Hyoſcyamus. Solanum ſomniferum. Portulaca. Sempervivum. Mandragora.*

Fourth degree. *Cicuta. Papaveris genera omnia, exceptò Corniculato; huic enim incidendi & abſtergendi vim attribuit Gal. Certè nitroſum & ſalſum guſtu percipitur, quò fit ut calidæ & ſiccæ ſit naturæ. Opium.*

Simples moiſt in the

Firſt degree. *Bugloſſum. Viola. Malva. Rapum. Spinacia.*

Second degree. *Ammoniacum. Lactuca. Cucurbita. Cucumis. Melones. Portulaca.*

Simples drie in the

Firſt degree. *Thus. Chamæmelum. Braſſica. Sarcocolla. Crocus. Faba. Fœnugræcum. Hordeum integrum.*

Second degree. *Artemiſia. Pix arida. Orobus. Plantago. Balauſtia. Nux moſchata. Lens Maſtiche. Mel. Sal. Anethum. Myrrha.*

Third degree. *Abrotonum uſtum. Abſinthium. Myrtus. Acetum. Aloe. Milium. Cuminum. Sanguis draconis. Galla. Sabina.*

Fourth degree. *Piper. Allium. Naſturtium. Sinapi. Euphorbium.*

The effects of the firſt qualities by accident.

Thoſe wee have mentioned have of themſelvs and their own nature all ſuch qualities; yet do they produce far other effects by accident, and beſides their own nature in our bodies, by reaſon of which they are termed accidental cauſſes. This ſhall bee made manifeſt by the following examples.

External heat by accident refrigerate's the bodie within, becauſ it open's the paſſages and pores, and call's for the internal heat, together with the ſpirits and humors by ſweats: whence it follow's, that the digeſtion is worſ, and the appetite is diminiſhed. The ſame encompaſſing heat alſo humect's by accident, whileſt it diffuſe's the humors concrete with cold: for thus Venerie is thought to humect.

The like may bee ſaid of Cold, for that it heat's, not by it's proper and native, but by an adventitious force: whereof you may make trial in Winter, when as the ambient cold, by ſhutting the pores of the bodie, hinder's the breathing forth and diſſipation of the native heat. Whence it is inwardly doubled, and the concoction better performed, and the appetite ſtrengthned. This ſame Cold alſo drie's by accident, when as it by accident repercuſſe's the humor that was readie to flow down into anie part, and whil'ſt it concrete's that which is gathered in the part: for thus, by the immoderate uſe of repercuſſers, an œdematous tumor proceeding from groſs and viſcid phlegm, degenerate's into a *ſcirrhus*.

Drineſs and Moiſture, becauſ they are more paſſive qualities, ſhew their effects by not ſo manifeſt operations, as heat and cold do; but in compariſon of them they are rather to bee judged as matter, or a ſubject.

## CHAP. IV.

### *Of the ſecond faculties of Medicines.*

WEE term thoſe the ſecond faculties of Medicines, which have dependance upon the firſt, which are formerly mentioned, as it is the part of *Heat* to Rarifie, Attract, Open, Attenuate,

Attenuate, Levigate, Cleanſ. Of *Cold*, to Condenſ, Repercuſs, Shut up, Incraſſate, Exaſperate, Conſtipate. Of *Moiſture*, to Soften, Relax. Of *Drineſs*, to Harden. Stiffen.

Hence wee term that an attractive medicine, which hath an attractive facultie, as on the contrarie, that a repercuſſive, that repel's; a detergent, that which cleanſes viſcous matter. Wee call that an Emplaſtick medicine, which not onely ſhut's up the pores of the bodie, but reduce's the liquid bodies therein contained to a certain equalitie and ſubſtance. Thus alſo emollients, relaxers, and the reſt, have their denominations from their effects, as wee ſhall declare hereafter.

## CHAP. V.

### *Of the third faculties of Medicines.*

THe third facultie of medicines depend's for the moſt part upon the firſt and ſecond faculties, ſomtimes conjoined, otherwhiles ſeparate. Alſo ſomtimes it follow's neither of theſe faculties, but a certain propertie and inexplicable qualitie, which is onely known by experience. Now the operations of this third facultie are to agglutinate, to fill with fleſh, to cicatrize, to aſſwage pain, to moov or ſtaie the urine, milk, ſeed, the courſes, ſweats, vomits, and perform ſuch like operations in, or about the bodie.

Thus the generation of fleſh is produced by the concourſ of two faculties, that is, of drying and cleanſing. But drineſs and aſtriction produce a glutinating and cicatrizing facultie. A hot and attenuating facultie cauſſeth ſweats, moov's urine, the courſes, and the like in the bodie; but contrarie faculties retard and ſtop the ſame.

To mitigate pain, proceeds' onely from the firſt facultie, to wit, from heat, or a moderately heating facultie; to procure reſt, from cold onely, or coldneſs ioined with ſom moiſture. But to procure vomit, proceed's neither from the firſt nor ſecond facultie, but from a certain occult and eſſential propertie, which is naturally implanted in Agarick, and other nauſeous and vomitorie medicines.

## CHAP. VI.

### *Of the fourth facultie of Medicines.*

THe fourth facultie of medicines is not of the ſame condition with thoſe that are formerly mentioned; for it depend's not upon them, or anie other manifeſt or elementarie qualitie, but on an occult propertie of the whole ſubſtance; by means whereof, it work's rather upon this then that part, upon this rather then that humor. Wherefore Phyſicians cannot by anie reaſon finde out this facultie, but onely by experience, as wee have ſaid a little before of medicines procuring vomit. Hence it is, that names are given to thoſe medicines from thoſe parts that they chiefly reſpect: For they are termed Cephalicks, which reſpect the head; as, Betonie, Marjarom, Sage, Roſemarie, *Stæchas*. Pneumonicks, which reſpect the Lungs: as, Liquorice, ſweet Almonds, Orris, Elecampane. Cordials, that ſtrengthen the heart: as, as Saffron, Cinnamom, Citrons; but chiefly their rindes, Bugloſs, Coral, Ivorie. Stomatical, which reſpect the ſtomach, and the orifice thereof: as, Nutmegs, Mint, Aniſ, Maſtick, Pepper, Ginger. Hepaticks, which reſpect the Liver: as, Wormwood, Agrimonie, Spiknard, Succorie, Sanders. Spleneticks, which have relation to the ſpleen: as, as Time, *Epithymum*, Broom flowers. Cetrach, Capers, the bark of their roots, the bark of Tamariſk. Diureticks, ſuch as reſpect the kidnies and urinarie paſſages: as, the roots of Smallage, Aſperagus, Fennel, Butcher's broom, the four greater cold ſeeds, Turpentine, Plantain, Saxifrage. Arthniticks, or ſuch as ſtrengthen the joints: as Cowſlips, *Chamæpytis*, Elecampane, Calamint, Hermodactils, and the like.

The fourth facultie of medicines depend's onely upon an occult propertie.

To this rank may bee referred purging medicines, which, furniſhed with a ſpecifick propertie, ſhew their efficacie on one humor more then another humor, and that impact more in one part then in another. For thus Agrick chiefly draw's phlegm from the head and joints, Rubarb draw's choller chiefly from the Liver, and hurt's the kidnies. But let us here forbear the conſideration of ſuch things, as not appertaining to Surgerie. But ſom medicines of this kinde are furniſhed with one ſimple facultie, otherſom with more, and thoſe contrarie, whereof you taſte may give you ſufficient notice: for Rubard at the firſt touch of the tongue is found acrid and hot; but when you com to chaw and throughly to taſte it, you ſhall finde it to partake of an earthlie aſtriction. Therefore becauſ taſtes give notice of the faculties of medicines, therefore I have thought good to treat of them briefly.

CHAP.

## CHAP. VII.

### *Of Taſtes.*

*Lib. 1. ſimpl.* TAſte, as *Galen* deliver's according to *Ariſtotle* and *Theophraſtus*, is a certain concoction of moiſture in drineſs, cauſſed by means of heat, which wee know or diſcern by the tongue well tempered, and fittingly furniſhed with ſpittle and his nervs. There are nine differences of taſtes; for there are three judged hot, to wit, the acrid, bitter, and ſalt: three cold; the acid, auſtere, and acerb: three temperate; the ſweet, the oilie or fat, and the inſipide. Now they are thought ſo manie, according to the different degrees of concoction; for it appear's greater in hot taſtes, and as it were a certain aſſation, but leſs in cold, but indifferent, and as it were an elixation in things temperate: therefore Nature obſerv's this order in the concoction of ſapid bodies, that at the firſt the acerb taſte ſhould take place, then the auſtere, and laſtly, the acid: from theſe (as it were) rudiments of concoction, ariſe's an inſipid, then an oilie, then a ſweet perfectly concocted and temperate. This concoction exceeding the bounds of mediocritie, there ariſe's a ſalt taſte, then a bitter, and then an acrid with the higheſt exceſs of almoſt a fierie heat. Yet I would bee thus underſtood, that all things that are by nature ſapid, do not alwaies aſcend to the height of ſweetneſs by the degrees of acerbitie, auſteritie, and aciditie, as though it were of abſolute neceſſitie, that all things that are ſweet, they ſhould bee acerb, auſtere, and acid. For there are manie things found, eſpecially in plants and their fruits, which when they ſhall arrive to their perfection and maturitie, are acid, bitter, or ſalt, but beeing yet unripe, and not com to full perfection, they have a certain ſweetneſs, which afterwards, by a further digeſtion, or perfection and concoction, acquire a bitter, auſtere, or acid taſte. For thus bitterneſs in Wormwood and Aloës, acrimonie in Pepper or Pellitorie, is a perfection of nature, a full ripeneſs and perfect concoction, and not an exceſs of heat in that *ſpecies*. Alſo acerbitie and auſteritie is a perfection of nature, and not a rudiment in Services and Cornelians; aciditie or tartneſs is alſo in verjuice. But in verie manie things it ſo fall's out, that the ſweet or fattie taſtes becom ſo, and acquire their perfection by concoction, as in Grapes, Figs, Pears, Apples, and almoſt all other ſuch fruits, as wee uſually feed upon. Therefore I will now treat of each of them in order, firſt beginning with cold taſtes.

Differences of taſtes.

The acerb taſte. The acerb taſte is cold and terreſtrial, and of a ſubſtance abſolutely groſs, beeing leſs humid then the auſtere, but much leſs then the acid. It notablie cool's and drie's, it condenſat's, binde's, repel's, eſpecially from the ſuperficies, and it alſo exaſperate's; this taſte reſide's, and may bee found in Pomegranat pills, Galls, *Sumach*, and Cypreſs nuts.

The auſtere. The auſtere is nigheſt in temper and effects to the acerb, but ſomwhat moiſter; for the acerb abſolutely conſiſt's in a terreſtrial and cold ſubſtance. Wherefore this, increaſed by a degree of concoction, acquire's more ſtore either of heat alone, or elſ of moiſture alone, or elſ of both together: moiſture, I ſay, and that is either aierie, or elſ watrie. Therefore if theſe fruits, which before their maturitie are acerb, have an acceſſion of heat, then do they becom ſweet, as you perceiv by Cheſnuts; but if there bee an acceſſion of moiſture onely, and that more groſs, of acerb they becom auſtere: for both the taſtes are in the like degree of cold, but the auſtere is the moiſture. But if to the ſame frigiditie remaining in fruits, a certain ſubtle humiditie accrew, then is there cauſſed an acid taſte. But if they have an acceſſion of a watriſh moiſture and heat, they will acquire a ſweet taſte, or elſ oilie, if the humiditie accrewing with the heat bee aierie.

I have judged it requiſite to admoniſh you hereof, that you might know by what means ſapid bodies mitigated becom ſweet of acerb, as it were by theſe interpoſed degrees of auſteritie, aciditie, and oilineſs, as they acquire a various acceſſion of heat and moiſture ſeparately, or conjunctly.

Now by all that wee have delivered, you may gather, that all acerb and auſtere things are cold and drie; and as they are cold, they repel and hinder defluxions: as they are drie and terreſtrial, they condenſate, incraſſate, conſtipate, and ſtraiten the paſſages; yea, and they alſo cicatrize: but acerb things perform this far more powerfully, as thoſe which are abſolutely terrene, cold, and drie, not partaking of moiſture, or water. Now auſtere things conſiſt (as it were) in a middle matter, that is, in a more dilute terrene bodie, as it is apparent in Services, unripe Grapes, Cornelians, Medlars, Crabs, wilde Pears, and all ſort of unripe fruits, whence it is termed a crude taſte.

The acid taſte. The acid taſte is of a cold and watriſh nature, but moſt ſubtle, by benefit whereof it penetrate's, and divide's almoſt as powerfully as the acrid. It incide's or divide's, attenuate's, bite's, cleanſe's, open's obſtructions, repel's and drie's. For by the means of the deep piercing cold, it repel's all defluctions; and by the drying facultie, which is ſtrong even in it's watrie conſiſtence, it ſtaie's and ſtops all bleedings, the hæmorrhoides and dyſenteries. The force thereof is chiefly manifeſt in Vineger, as alſo in the juice of Citrons, Sorrel, Cherries, Berberies, and the like. And this is the nature of cold taſtes, now it is time wee ſpeak of ſuch as are temperate.

The

The inſipid is unproperly termed a taſte, as that which is rather a privation of taſtes, it is in ſom ſort cold, and of a verie watriſh and groſs nature, it inſpiſſate's, conſtipate's, and ſtupifie's. This kinde of taſte is chiefly manifeſt in Water, and next in Gourds, Citruls, and manie ſuch like things. The inſipid.

The oilie taſte is hot, humid, and aiërie; therefore it humect's, relaxate's, mollifie's, lubricate's. Of this kinde are oil, butter, fat which is not rauced by age, nor acrid by nature, as that of Lions and Foxes. The oilie.

The ſweet taſte is made by a moderate and well concocting heat, conſiſting in a matter more tenuious and hot then the inſipid, but in ſomwhat more groſs then the oilie, from which in the firſt qualities it doth not differ; therefore it is of a hot, aiërie, and temperate nature. Therefore everie ſweet thing detergeth, levigate's, concoct's, ripen's, relaxe's, and aſſwageth pain. Examples of this taſte may bee had in Sugar, Honie, Manna, ſweet Almonds, Milk, and other like. Now let us com to hot taſtes. The ſweet.

The ſalt taſte is hot and aſtringent, leſs earthie then the bitter, as that which reſide's as it were in a middle matter. For it proceed's from an earthie drineſs, which is formerly torrified and attenuated by the force of heat in a watrie humiditie. Wherefore that which is ſalt contract's the pores, cut's, cleanſe's, digeſt's, or rather drie's up the humors by the drineſs thereof, without anie manifeſt ſenſ of heat, whence it is, that it vindicate's from putrefaction. Under this kinde are conteined all ſorts of ſalt; as ſalt-peter, *niter*, *ſal Ammoniacum*, *ſal gemmæ*, common-ſalt, ſea-water, and ſuch other like. The ſalt.

The bitter taſte is hot, earthie, and drying; for the matter thereof is groſs and earthie, which the abounding heat hath torrified and dried up. Wherefore bitter things taken inwardly, purge and carrie away ſuperfluous humors: and outwardly applied, they mundifie and deterge ulcers, they open the mouths and paſſages of the veins oft-times by their abſtergent facultie; whence it is that they moov the courſes and hæmorrhoïdes. The principal things indued with this taſte are Aloës, Gall, Wormwood, Gentian, the leſſer Centaurie, Coloquintida, Fumitorie, Soot, and ſuch like. The bitter.

The acrid taſte is hot, of a ſubtil and fiërie nature; for it is kindled of a hot, ſubtle, and drie matter, neither can it conſiſt in anie other. Therefore that which is acrid, heat's, prick's or bite's the mouth by the acrimonie, it heat's, and oft-times burn's, it penearate's, open's the paſſages, attenuate's, attract's and draw's forth groſs humors, evacuate's and ſend's forth urine, the courſes, and ſweat: beſides it oft-times is ſeptick, bliſtering, and eſcharotick; and laſtly, burning, and cauſtick. The ſeptick and putrefactive things are ſublimate, *Chamælen*, the juice of *Thapſia*. The veſicatories are Dittander, Cantharides, Crow-foot, Muſtard, Pellitorie of Spain, *Euphorbium*. But the cauſtick and eſcharotick are Lime, Oke-aſhes, and the like. The acrid.

But wee know medicines not onely by the taſte, but alſo by our other ſenſes, as touch, ſight, hearing, ſmell. And as by the taſte, ſo alſo by theſe wee judg of and trie the goodneſs of medicines, and diſtinguiſh the true legitimate from the adulterate. The touch judge's what are hot and cold, moiſt and drie, rough and gentle, or ſmooth, hard and ſoft, brittle or friable, glutinous and viſcid, drie or ſlipperie. Wee approov of the goodneſs of medicines by their color, brightneſs, or duskineſs, whereof the eie is judg; for wee commend that Senna which is ſomwhat greeniſh, but diſlike the whitiſh: as alſo wee like well of ſuch Caſſia as is black both within and without, ſhining and full, and not drie and ſhrunk up. Yet the judgment of the firſt qualities, by the color is deceitful, or none at all; for ſuch things as are white, or the color of Snow, are not therefore cold: for ſundrie of them are hot, as Lime. Neither are red things to bee therefore judged hot; for Roſes cool. Alſo medicines are choſen by the ſmell; for ſuch as have a good, freſh, and natural ſmell, are commonly hot, and in their perfect vigor. On the contrarie, things that want ſmell are for the moſt part cold and evanid. By hearing wee diſtinguiſh things full from ſuch as are emptie: thus wee chuſe Caſſia, which ſhaken, make's no noiſ with the grains or ſeeds rattling in it. Hitherto wee have explained the firſt, ſecond, third, and fourth faculties of medicines in general, and have ſhewed how they may bee found out: now muſt wee more particularly treat of their ſecond and third faculties, becauſ by reaſon of theſe they chiefly com into uſe in Surgerie: Yet let mee firſt briefly ſhew by what means and arts they may bee prepared.

## CHAP. VIII.

### *Of the preparation of Medicines.*

TO prepare medicines, is nothing elſ, then by Art to make them more commodious for uſe and compoſition, whereby they are either made

*More gentle.* By *bruiſing*; as when medicines are broken by ſtriking and rubbing or grindeing in a mortar, and that either of Braſs, Iron, Lead, Glaſs, Wood, Marble, and other like. Conſidering the thing which is to bee beaten. The ſtrength or force wherewith it muſt bee performed. The time or ſpace. The ſituation. The things to bee added. The conſiſtence which the thing beaten muſt bee of.

*More ſtrong*

By *ſearſing*; whereby wee ſeparate the pure and finer from the more impure and groſs, which is don by ſivs and ſearſes, made of Wood, Parchment, Horſ-hair, Silk, Lawn. Wherein is to bee noted, that the ſame conſideration is to bee had in ſearſing, asin beating; therefore ſuch things as are to bee finely powdered, muſt bee ſearſed in a finer ſearſ: ſuch as are more groſs, in a courſer.

*More pleaſant*

By *diſſolving* or *mollifying*; Which is nothing elſ but a diſſolving of a ſimpleor a compound medicine, of a thick or hard conſiſtence, either into a mean conſiſtence, or a little more liquid or ſoft, which is performed either by heat onely for by heat gums and horns are mollified: or by liquor, as by vineger, water, wine, juice of Limmons, &c.

*More wholeſom*

By *deſiccation* or *hardening*; which is nothing elſ, but the conſuming of the ſuperfluous and hurtful moiſture; and this is performed, either by the Sun, or by Fire. By *infuſion*; which is nothing elſ but the tempering or macerating of a medicinea little beaten or cut, in ſom liquor appropriate and fit for our purpoſe; as in Milk, Vineger, Water, oil, and the like, ſo long as the nature of the medicine require's. To Infuſion, Nutrition may bee reduced, which is nothing elſ, but as it were a certain accretion of the medicine, by beeing moiſtened, macerated, rubbed, or groun'd with ſom moiſture, eſpecially with heat. By *burning*; that is, by conſuming the humiditie which is in them. And that, either that they may bee the better powdered, beeing otherwiſe too glutinous, or that they may laie aſide their groſs eſſence, and becom of a ſubtiler temper; or that they may put off, or partly loſe ſom fiërie qualitie, as acrimonie, *Gal. lib. 4. cap. 9. ſimplicium.* Or that they may acquire a new color. Now all things are burnt, either alone; as, ſuch things as have a fattie moiſture, as hairs, ſweatie wool, horns: Or elſ with ſom combuſtible matter; as ſulphur, alum, ſalt, barlie, &c.

*More fit for mixture*

By *boiling* or *elixation*; which is performed by a humid heat; as burning is by a drie, and that either that wee may increaſ the weak faculties of ſuch medicines as are boiled, by boiling them with ſuch as are ſtronger; or elſ to weaken ſuch as are too ſtrong, or elſ wholly to diſſipate ſuch as are contrarie: Or that one facultie may ariſe of ſundrie things of different faculties beeing boiled together, or for the longer keeping them, or bringing them to a certain form or conſiſtence: All which are don, by the Fire, or Sun. By *waſhing* or *cleanſing*; whereby the impuritie of the medicine is waſted away or cleanſed, and ſuch things are either hard: as metals, ſtones, parts of living creatures, condenſed juices, and otherlike: Or ſoft; as Roſins, Gums Fats, Oils And theſe ought firſt to bee finely beaten, that the water may penetrate in all their ſubſtance. Or to bee diſſolved, and caſt into a veſſel filled with water, and ſo ſtirred, and then ſuffered to ſubſide, ſo that the fat mayſwim aloft: And this muſt bee don ſo long that the water retain nothing thereof in color, ſmell, or taſte.

## CHAP. IX.

### *Of repelling, or repercuſſive Medicines.*

Aſtringents are underſtood by the name of repellers.

REpelling or repercuſſive medicines are cold, and of groſs and earthie parts; by which name alſo aſtringent medicines are underſtood, becauſ they hinder the falling down of the humors upon the part. Repercuſſives are ſuch, either of their nature, and of themſelvs, or elſ by accident, beeing not ſuch of their own nature. Theſe which of themſelvs are ſuch, are of two kindes; for ſom are watriſh and moiſt, without anie aſtrictive facultie, which almoſt wholly proceed's from an earthie eſſence; wherefore that facultie of repelling which they poſſeſs, they have it wholly from coldneſs. Of this kinde are lettuce, purſlain, ſow-thiſtle, duck's-meat, kidnie-wurt, cucumbers, melons, gourds, houſ-leek, mandrag-apples, night-ſhade, henbane, and the like, which cool powerfully, and unleſs they bee taken away before the part wax blackiſh, they extinguiſh the natural heat. Other ſom are of an earthie eſſence, and therefore aſtrictive; but yet ſom of theſe are hot, other ſom cold. Such things as are cold of temper, and of an earthie conſiſtence, are properly and truly termed repellers. Of theſe, ſom are ſimple, other ſom compound: the ſimples are plaintain, vine-leavs, leavs of roſes, okes, brambles, cypreſs, berberies, *ſumach*, all unripe fruits, verjuice, vineger, red wine, the juice of ſower pomegranats, *acacia*, the juice of barberries, and quinces, *hypociſtis*, pomegranate-pills, oke-bark, the flowers of wilde pomegranats, the meal of barlie, beans, panick, oats, millet, *orobus* mixed with juices in form of a pultis, bole-armenick, *ſanguis draconis*, ceruſs, litharge, *terra ſigillata*, fuller's-earth, chalk, marl, the load-ſtone, lead, corals, all marchiſites, antimonie, *ſpodium*, true *pomphylix*, all ſorts of earth, and other things of the like nature.

The differences of repercuſſives.

Now compound things are *Oleum roſaceum*, *omphacinum*, *mirtillorum*, *papaveris*, *cidoniorum*, *nenupharis*, *unguentum roſatum*, *album rhaſis*, *camphoratum*, *emplaſtrum diacalcitheos*, diſſolved in vineger and oil of roſes, *deſiccativum rubrum*, *populeon*, *emplaſtrum nigrum ſeu tetrapharmacum* of *Galen's* deſciption, *empl. contra ruptur am*, *de ceruſa*, *pro matrice*. All ſuch cold repercuſſives

repercuſſives are more effectual if they bee aſſociated with tenuitie of ſubſtance, either of themſelvs, or by mixture with ſom other things: for to this purpoſe wee often mix vinegar, camphire, and the like things of ſubtil parts, with repercuſſives of groſs parts, that they may ſerv as *vehicles* to carrie in the repercuſſive's facultie. Repercuſſives of groſs parts and hot, are wormwood, centorie, gentian, agrimonie, ſavin, coriander, mint, baie-leavs, cardamomes, *calamus, aromaticus*, aloës, ſpiknard, ſaffron, nutmeg, cinnamom, amber, ſalt, alum, coporas, *ſulphur, oleum abſinthinum, maſtichinum, nardinum, coſtinum, ceratum, Gal. ſtomachicum, ſantalinum, emplaſtrum diacalcitheos.* But ſuch things as repel by accident, are bandages, compreſſes, linnen-cloths, and rowlers of all ſorts, caſes, cauteries, blood-letting, cupping, painful frictions in the oppoſite parts, and other ſuch like things as are properly ſaid to make revulſion. The uſe of repercuſſives is to force back the humor which flow's from anie other place into the part, and thus they mitigate the heat of ſuch inflammation as that defluxion of humors hath cauſſed, yea, oft-times to aſſwage and help pain, the fever, abſceſs, malign ulcers, and mortification. Such repercuſſives muſt alwaies bee ſo oppoſed to the diſeaſ, that reſpect may bee had to the temper, complexion, and particular nature of the part whereto they are applied; for all parts cannot equally bear the like force of repercuſſives, as nervous and other ſpermatick and cold parts. Furthermore, there are ſom parts whereto wee may by no means applie repercuſſives; as the groins, arm-pits, and thoſe glandules or kernels which are behinde the ears and brain, leſt the humor ſhould retire back into ſom of the Principal parts: the like reaſon is alſo of bodies; for the bodies of women, children, eunuchs, cannot endure ſo ſtrong repercuſſives and the like exceſs of cold as the manlie and vigorous bodies may. Beſides, everie diſeaſ require's not repercuſſives, for if the bodie bee repleat with ill humors; if it bee plethorick; the uſe of repercuſſives, unleſs after general purgation, cannot bee ſafe; as neither if the humor, which is in motion, ſhall bee venenate, groſs, acrid, critical, or ſhall cauſ great pain in the part, for then on the contrarie wee muſt rather make uſe of attractives. But now if the diſeaſ bee great, weak repercuſſives will avail nothing againſt it, as lettuce againſt a great inflammation; and thou ſhalt do ill if thou ſet upon a ſmall defluxion with powerful repellers; for by that means the skin is ſtraitned, and the paſſages thereof ſtop't, whereby the inflammation is increaſed, or elſ brought to a *ſcirrus*. Wherefore let the Surgeon have a care that hee temper the force of his Repercuſſives according to the magnitude of the diſeaſ.

Why things of ſubtil parts are oft-times mixed with repercuſſives.

Repellers by accident.

When, and to what parts repercuſſives muſt bee applied.

## CHAP. X.

### *Of attractive medicines.*

AN attractive medicine is contrarie to the repeller; the Greeks call it *Helkticum*, it is of a hot and thin ſubſtance, whereby it draweth forth into the ſuperficies of the bodie that which lieth hid in the center, although ſomtimes it doth it by an occult qualitie; other-whiles alſo by accident, as by the acrimonie. Thoſe things which by a manifeſt qualitie do attract, are either ſimple or compound.

What an attractive medicine is.

The ſimple are *Bryonia, allium, cæpa, porrum, araſtolochia, hermodactyli, ciclamen, lilium, ſigillum beatæ Mariæ, arum, aſarum, aſphodelus, gentiana, pyrethrum, ruta, ſabina, calamentum, omnes tithymalorum ſpecies, viſcum, abrotanum, anagallis, urtica, ranunculus, ſtruthium*, and ſuch like: *Ammoniacum, bdelium, gabbanum, ſagapenum, euphorbium, aſphaltum, cinis è fæce vini vel aceti, calx viva, ſulphur, ſal ammoniacus, omnis ſalis ſpecies, auripigmentum, oleum vetus, adeps leonis, urſi, canis, anſeris, viperæ, ranarum, axungia porci vetuſtate acris, aut attritu rotarum. Compoſita verò, ut oleum de ſpica, philoſophorum, de terebinthina, de croco, de ſcorpionibus, rutaceum, vulpinum, laurinum, anethinum, de vitriolo, unguentum Agrippæ, aragon, ſeu auxiliare, martiatum, enulatum, theriaca, mithridatium, empl. de meliloto, diachylon magnum & parvum, oxycroceum, divinum.*

Attractives by a manifeſt qualitie.

Thoſe things which draw by a ſecret propertie in nature, as are the load-ſtone, quick-ſilver, pyonie, amber, all antidotes and triacles that are remedies againſt the biteings of venemous beaſts, and all purging medicines.

By an occult.

Theſe which draw by accident, perform it otherwiſe then of their own nature, they have that qualitie out of putrefaction and corruption, as dove's dung, goat's dung, cow-dung, man's dung, and all kinde of dungs: alſo leven, old cheeſ, and ſuch like.

By accident.

Cupping glaſſes, leeches, ſyringes, rougher and harder frictions, ſucking, pain, ſtraight ligations, cauteries do alſo draw, but after a different manner from them ſpoken of before.

Attractive medicaments muſt neither burn nor diſcuſs, and beeing verie ſtrong and ſharp, they ſhould bee tempered and mixed with oil of roſes, and other lenitives: but to weak ones ſhould bee added oil of baies, *calx viva*, and ſuch like to ſtrengthen them. The uſe of attractives is to draw poiſon toward the skin, and to haſten forward critical abſceſſes;

Their uſe.

and they make thoſe parts which are benummed and conſumed, to have liſe, they reſtore the refrigerated parts by drawing thither the ſpirits; they draw forth the viſcous filth of malign ulcers that lie's hid in the nervs, and hollow paſſages of them; they alſo draw out ſcales of bones, ſplinters of wood, nails, thorns, arrows, and that matter which is impact in hardned inflammations.

## CHAP. XI.

### *Of reſolving Medicines.*

What a reſolving medicine is. The differences thereof.

That is called a reſolving medicine, which by heat, and the tenuitie of his ſubſtance openeth the pores, attenuate's the humors, diſſipate's and diſeuſſeth by evaporating the unprofitable matter. There are two ſorts of theſe kindes of medicines; the one is called *Arætoticum* or rarifying; the other is termed *Diaphoreticum*, or digeſting.

The *Arætoticum* by a mean heat, and not drie, and indued with a tenuitie of ſubſtance, openeth and relaxeth the skin, and draweth forth the matter ſhut up under it, whereby it may eaſ pain, like as Anodynes, becauſ it doth not much depart from a temperate heat.

But the *Diaphoreticum* beeing much hotter, whatſoever ſticketh in the part beeing there impact, it doth by thin vapor inſenſibly diſſipate: therefore the acrid and hot things are in this caſe to bee made uſe of rather then then attractives, becauſ that cold and groſsneſs is more difficulty to bee digeſted, and the length and involution of the waies beeing to bee conſidered. The Arætick, which wee may call weak reſolvers, are either ſimple or compound.

The ſimples are theſe, *Biſmalva tota, parietaria, adianthum, mercurialis, ebulus, valeriana, roſmarinus, ſalvia, thymus. chamæmelum, melilotum, anethum, farina bordei, tritici, ſeminis lini, fænugræci, nigella, furfur, adeps gallinæ, anſeris, anatis, cuniculi, vituli*; almoſt all metals unleſs ſuch as are acrid. The compounds are *Oleum chamæmolinum, anethinum, liliaceum, catellorum, lumbricorum, Keirinum, de vitellis ovorum, de tritico, amygdalarum dulcium, Unguentum de althæa, empl. diachylum, ireatum.* Diaphoreticks or digeſtives, are alſo both ſimple and compound: The ſimple are *Ariſtolochia, enula campana, iris, cæpa, ſcylla, ſigillum Salomonis, ſigillum beatæ Mariæ, bryonia, panis porcinus, dracunculus, aſphodelus, origanum, mentha, pulegium, ſabina, ſerpillum, calamentha, hyſſopus, urtica, arthemiſia, lavendula, chamepytis, aniſum, fœniculum, cuminum, piper, nux moſchata, coriandrum, baccæ lauri & juniperi, farina, fabarum, lupinorum, orobi, milii, frumenti, furfur, mica panis, acetum tepidum, oxycratum, vinum vetus aut aromaticum, mel, aqua vitæ, muria, adeps tauri, equi, leonis, canis, hirci, medulla cervi, cruris bovis & arietis, ammoniacum, galbanum, opopanax, ſagapenum, myrrha, bdelium, thus, terebinthina, pix nigra, ladanum, ſtirax, calamita, benioinum, ſtercus caprinum, columbinum, caninum, bubulum, & aliæ ſtercorum ſpecies.*

Compound diaphoreticks are *Oleum amygdalarum amararum, Juniperinum, laurinum, de ſcorpionibus, irinum, coſtinum, nardinum, de terebinthina, de croco, canabinum, raphaninum, è cucumere agreſti, vulpinum, rutaceum, philoſophorum de lateribus, de euphorbio, de tartaro, de petroleo, de kerva, ſive ricininum, unguent. Agrippæ, aragon, martiatum, enulatum, empl. de Vigo,* without addition, and with addition, *oxycroceum, diacalcitheos,* diſſolved in a digeſting oil to the form of a cerat.

Arætoticks are profitably uſed in the increaſ and ſtate of ſuperficial tumors.

The uſe of diaphoreticks.

But Diaphoreticks are not to bee uſed in the increaſ of tumors, unleſs ſom aſtringent bee added, leſt by their more ſtrong digeſtion, they ſhould draw and increaſ the defluxion: but when the tumors decline, they are then onely to bee uſed in the parts chiefly where the skin is denſ and hard, and when the humor is cold and groſs, and lying hid deep in the bodie, ſo that the virtue of medicaments can hardly com thereto: but conſideration is to bee had of the parts to which reſolutives are to bee applied; for you may not applie relaxers or diaphoreticks to the liver, ſpleen, ſtomach, or bowels, unleſs you add ſom aſtringents, of which a great part muſt bee aromaticks.

To the parts, where ſenſ is more dull, may bee applied the ſtronger diaphoreticks, but thoſe parts which are indued with a more exquiſite ſenſ, as the eie and the nervs, to them wee muſt applie weaker. When the matter is groſs and cold, things cutting and attenuating, and then emollient are to bee uſed, and ſo by degrees com to diaphoreticks; otherwiſe that onely is reſolved which is the moſt ſubtil of unprofitable matter, the groſſer becomming concrete and hardned. But if the part bee afflicted with a continual defluxion, ſo that there may bee danger of a gangrene or ſphacel, it is not lawful then to make uſe of reſolvers, but you muſt in the place where the humor flow's, divide the skin by ſcarification, as it is moſt learnedly noted by *Hollerius* in that profitable book of his left to poſteritie, whoſe title is, *De materia Chirurgica.*

CHAP.

## CHAP. XII.

### *Of Suppuratives.*

A Suppurative medicine is said to bee that, which shutting the pores, and preventing transpiration by his emplastick consistence, increaseth the matter of native heat, and therefore turneth the matter cast out of the vessels into *pus* and *sanies*. It is of nature hot and moist, and proportionable to the native heat of the part to which it is applied, and of an emplastick consistence, that so it may hinder the native heat from beeing exhaled; in which respect it differeth from emollients and malacticks, of which wee shall speak hereafter. There bee two kindes of suppuratives, for som do it of themselvs, and by their proper qualitie; others by accident. Those things which by their own strength do bring to suppuration, are either simples or compounds.

What a suppurative medicine is.

Differences of suppuratives.

Simples are *radix liliorum, cæpa, allium, malvarum omnium folia & semina, bugloſſum, acantbus, senecio, violæ, parietaria, crocus, caules, ficus, passulæ mundatæ*, with a decoction of these things, *farina tritici, farina volatilis, farina hordei excorticati, lolii, seminis lini & fænugræci, galbannm, ammoniacum, styrax pinguis, ladanum, viscum aucupatorum, thus, pix, cera, resina, colla, adeps, suillus, vitulinus, vaccinus, caprinus, butyrum, vitellus ovi, æsipus humida, stercus suillum, columbinum, caprinum, pueri.*

Compounds are *oleum liliorum, lumbricorum, de croco, unguent. basilicum, emplast. diachilon commune, magnum, de mucilaginibus.*

Those things do suppurate by accident which work it onely by the means of an emplastick consistence: for so often-times astringents, becaus they are of earthie and thick parts, are found to suppurate; such are *unguentum de bolo nutritum*, and such like. Such also are those which by their coldnes keep the heat in, and shut the pores. Hence it is that the qualities of sorrel are commended to generate *pus*: for whil'st it keepeth the heat within, it increaseth his effects, to the thickning of the suppurable matter, and the overcomming other rebellious qualities. Wee use things ripening in great inflammations, whose growth wee cannot hinder with repellers, or increas with resolvers or discussers.

Suppuratives by accident.

## CHAP. XIII.

### *Of Mollifying things.*

That is defined to bee a mollifying medicine, which by a stronger heat then that which is proper to suppuratives, without anie manifest qualitie of drying or moistning, again malaxeth or softeneth hardned bodies: wherefore this differ's from that which suppurate's, becaus that they bee hot in the first or second degree, according to the several temper of the bodie, or part to which it is applied, working rather by the quantitie of heat, then the qualitie: contrariwise, that which mollifieth beeing indued with a greater heat, rather worketh by the qualitie of the heat, beeing otherwise in drines and moisture temperate.

*Gal. cap. 7. lib. 5. simp.*

How suppuratives & emollients differ.

Although as manie things agree together in som respects, though of a diverse nature; so manie emollients are such as are hot in the first degree, and drie in the second and third, that so they may the better disperse and diffuse that which is congealed, by taking away a little of the humiditie, which is contained within the part affected: but not by exhausting it wholly by the violence of heat or drines: for hereon would follow a greater hardnes.

Things mollifying, are either simple or compound; and these again strong or weak. The weak are, *Radix liliorum alborum, cucumeris agrestis, althææ, folia malvæ, bismalvæ, liliorum, anetbi summitates, viola, branca ursina, semen malvæ, bismalvæ, lini, fænugræci, carici pingues, passulæ mundatæ, pedum, capitum, intestinorum vervecinorum decoctum, adeps ex junioribus & castratis, domesticis, fœminis animalibus, adeps suillus, vitulinus, hædinus, caprinus, bubulus, vulpinus, gallinaceus, anserinus, anatinus, olorinus, efficaces.* The weaker are things more gentle; as, *Butyrum, lana succida, cera pinguis, vitellus ovi, medulla ex ossibus, cervina, ovilla, caprina.* The compound are oil, wherein are boiled mollifying herbs; as, *Oleum liliorum, chamæmelinum, amygdalarum dulcium.* Stronger emolliments are, *Acetum, adeps taurinus, ursinus, cervinus, leoninus, pardalinus, apri, equi sevum, pinea, picea, abietina, terebenthina, ammoniacum, bdelium, styrax, galbanum, ladanum, propolis, opopanax, ung. de althæa, emp. diachylon commune & magnum, de mucilaginibus, ceroneum, oxycroceum, Joannis de vigo.*

The differences of emollients.

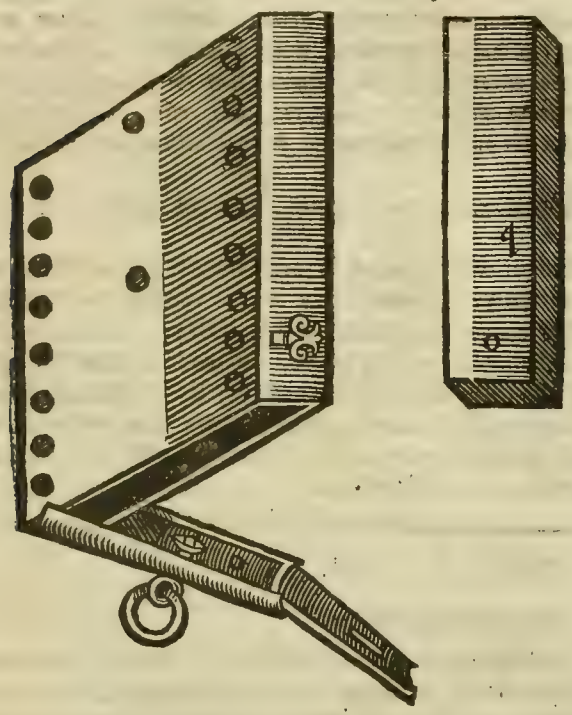
Wee use emollients in scirrous tumors of the muscles, or in the lips of ulcers, in anie of the limbs, bellie, glandules, bowels, by reason of a gross, cold, and viscous matter, either phlegmatick, or melancholick. Yet those tumors which com of melancholie, commonly turn to cancers, which are exasperated by mollifying things. On the contrarie, such as proceed from a phlegmatick matter, are brought to an equalitie of consistence, by the use of emollients. Furthermore, there are three things observable in the use of emollients: the first is,

Their use.

Things obſervable in the uſe of emollients.

duly to conſider how much the affected parts differ's from his proper and naturall temper and proportion, that ſo wee may applie an equivalent remedie. The ſecond is, that wee diſtinguiſh the natures of the parts. The third is, that wee artificially gather after what manner this mollifying muſt bee performed; that is, whether wee ſhould mingle with the emolliments, deterſive or diſcuſſing medicines. For there are manie deſperate ſcirrous tumors, that is, ſuch as cannot bee overcom by anie emollient medicine, as thoſe which are grown ſo hard, that they have loſt their ſenſ; and thereupon are becom ſmooth and without hairs. Here you muſt obſerv, that the part ſomtimes becom's cold in ſo great an exceſs, that the native heat plainly appear's to languiſh, ſo that it cannot actuate anie medicine. That this languiſhing heat may bee reſuſcitated, an iron-ſtove ſhall bee ſet neer to the part, wherein a good thick piece of iron heated red hot ſhall bee encloſed, for ſo the ſtove will keep hot a long time.

*The figure of an iron ſtove.*



A. *The caſe of the ſtove.*
B. *The iron-Bat to bee heated.*
C. *The lid to ſhut the ſtove.*

## CHAP. XIV.

### *Of Deterſives, or Mundificatives.*

A Deterſive is defined to be that which doth deterge or cleanſan ulcer, and purge forth a double kinde of excrement; of the which one is thicker, which is commonly called *ſordes*, which is drawn forth from the bottom of the ulcer, by the edificatious qualitie of the medicine, the other is more thin and waterie, which the Greeks call *Ichor*, the Latins *Sanies*, which is taken away by the drineſs of the medicine; and therefore *Hippocrates* hath well adviſed, that everie ulcer muſt bee cleanſed and dried.

Deterſives.

Of Deterſives, ſom are ſimple, ſom compound, ſom ſtronger, ſom weaker. The ſimple are either bitter, ſweet, or ſowr: the bitter are *Gentiana, Ariſtolochia, iris, enula, ſcilla, ſerpentaria, centaurinum minas, abſinthium, marrubium, perforata, abrotonon, apium, chelidonium, ruta, hyſſopus, ſcabioſa, arthemiſia, eupatorium, aloë, fumus terræ, hædera terreſtris*, a *lixivium* made with the aſhes of theſe things, *lupini, orobus, amygdala amara, faba, terebinthina, myrrha, maſtiche, ſagapenum, galbanum, ammoniacum*, the gals of beaſts, *ſtercus caprinum, urina bene cocta, ſquamma æris, æs uſtum, ærugo, ſcorta æris, antimonium, calx, chalcitis, miſy, ſory, alumen.* The ſweet are *Viola, roſa, mellilotum, ficus pingues, dactyli, uvæ paſſæ, glycyrrhiza, aqua hordei, aqua mulſa, vinum dulce, mel ſaccarum, ſerum, lactis, manna, thus.* The ſharp are all kinde of ſowr things, *Capreoli vitium, acetum*, and other acid things. The compound are *Syrupus de abſinthio, de fumaria, de marrubio, de eupatorio, de arthemiſia, acetoſus, lixivium, oleum de vitellis ovorum, de terebinthina, de tartaro, unguentum mundificativum de apio, apoſtolorum, pulvis mercurialis.*

Their uſe.

Wee uſe ſuch things as deterge, that the ſuperfluous matter beeing taken away, nature may the more conveniently regenerate fleſh to fill up the cavitie: But in the uſe of them, conſideration is firſt to bee had of the whole bodie, whether it bee healthie, plethorick, or ill diſpoſed, there is conſideration to bee had of the part, which is moiſter and drier, indued with a more exquiſite or duller ſenſ. But oftentimes accidents befal ulcers beſides nature, as a *callus*, a defluxion of a hot or otherwiſe malign humor, and the like ſymptoms. Laſtly, conſideration is to bee had, whether it bee a

new

new or inveterate ulcer; for from hence, according to the indication, remedies are appointed different in quantitie and qualitie: ſo that oftentimes wee are conſtrained to appoint the bitter remedie in ſtead of the ſweet. Neither truly with a painful and drie ulcer doth anie other then a liquid deterſive agree: neither to the moiſt anie other then that of a drie conſiſtence, as Powders.

## CHAP. XV.

### *Of Sarcoticks.*

THat medicine is ſaid to bee ſarcotick, which by its drineſs help's nature to regenerate fleſh in an ulcer hollow, and diligently cleanſed from all excrements. But this is properly don by blood indifferent in qualitie and quantitie. Wherefore, if wee muſt ſpeak according to the truth of the thing, there is no medicine which can properly and truly be called ſarcotick: For thoſe which vulgarly go under that name, are onely accidentally ſuch; as thoſe which without biting and eroſion do drie up and deterge the excrements of an ulcer, which hinder the endevour of nature in generating of fleſh. For as by the law of nature, from that nouriſhment which flow's to the nouriſhing of the part, there is a remain, or a certain thin excrement, flowing from ſom other place, called by the Greeks *Ichor*, and by the Latines *Sanies*: Thus by the corruption of the part there concreet's another groſſer excrement, termed *Rypos* by the Greeks, and *Sordes* by the Latines. That make's the ulcer more moiſt, this more filthie. Hence it is, that everie wound which require's reſtitution of the loſt ſubſtance, muſt bee cured with two ſorts of medicines, the one to drie up and waſte the ſuperfluous humiditie thereof, the other to fetch off the filth: and by how much the wound is the deeper, by ſo much it require's more liquid medicines, that ſo they may the more eaſily enter into everie part thereof.

No medicine truly ſarcotick

But diverſitie of things ſhall bee appointed according to the various temper of the part. For if the affected part ſhall bee moiſt by nature, ſuch things ſhall bee choſen as ſhall bee leſs drie: if on the contrarie the part bee drie, then ſuch things ſhall bee uſed as bee more drie; but manie ſorts of medicines ſhall bee aſſociated with the ſarcoticks, according to the manifold complication of the effects poſſeſſing the ulcer. Therefore nature onely is to bee accounted the workmaſter, and the efficient cauſ in the regenerating of fleſh, and laudable blood the material cauſ, and the medicine the helping or aſſiſting cauſ, or rather the cauſ without which it cannot bee: as, that by cleanſing and moderately drying without anie vehement heat, tak'es away all hinderances of incarnation and orders, and fit's the blood to receiv the form of fleſh. This kinde of medicine according to *Galen*, ought to be drie onely in the firſt degree, leſt, by too much drieneſs, it might drink up the blood and matter of the future fleſh, which notwithſtanding is to bee underſtood of ſarcoticks, which are to bee applied to a delicate and temperate bodie. For if the ulcer bee more moiſt, or the bodie more hard then is fit, wee may aſſcend to ſuch things as are drie, even in the third degree. And hence it is that ſuch drie medicines may firſt bee called deterſives, and then preſently ſarcoticks. A ſarcotick medicine is either ſimple or compound, ſtronger or weaker. Simple ſarcotick medicines are, *Ariſtolochia utraque, iris, acorus, dracunculus, aſarum, ſymphyti omnia genera, betonica, ſanicula, millefolium, lingua canis, verbena, ſcabioſa, pinpinella, hypericon, ſcordium, plantago, rubia major, et minor eorumque ſucci. Terebinthina lota & non lota, reſina pini, gummi arabicum, ſarcocolla, maſtiche, colophonia, manna thuris, cortex ejuſdem, aloë, olibanum, myrrha, mel, vinum, ſanguis draconis, lythargyros auri, ſpodium, pompholix, tutia, plumbum uſtum lotum, ſcoria ferri.* The compound ſarcoticks are, *Oleum hypericonis, ol. ovorum, maſtichinum, & cætera olea, quæ balſami nomine appellantur, unguentum aureum, emp. de betonica, vigonis, de janua, Emp. gratia Dei, Emp. nigrum.* Wee uſe not ſarcoticks before that the ulcer bee cleanſed and free'd from pain, defluction, inflammation, hardneſs, and diſtemper. In uſing theſe things wee conſider the temper of the bodie, and the affected part: For oft-times a part otherwiſe leſs drie by nature, require's a more powerful drying medicine, and ſtronger ſarcotick, then another part which is more drie, and this for ſom other reaſon, which ought to com into our conſideration: For example, the *glans* would bee more dried then the produce, although it bee of a temper leſs drie, becauſ it is a paſſage of the urine. Wherefore wee muſt diligently obſerv the condition of the affected parts, and thence taking indication, make choice of more ſtrong ſarcoticks. For both that which is too little, and that which is too much ſarcotick, make's a ſordid ulcer: the firſt, becauſ it drie's not ſufficiently; the later, for that by its acrimonie it cauſſeth defluxion. Therefore diligent care muſt bee uſed in the examination hereof.

Simple ſarcoticks.

Compound Sarcoticks.

## CHAP. XVI.

### *Of Epuloticks, or skinning mecicines.*

AN Epulotick medicine is that which covereth the part with skin: it is ſaid to bee ſuch as by drieneſs and aſtriction without biting deſiccate's, binde's and condenſate's the fleſh into a certain callous ſubſtance, like to the skin, which wee commonly call a cicatrize or ſcar:

ſcar: yet this, as the generating of fleſh, is the work of nature. A medicine therefore is ſaid to bee Epulotick, for that it aſſiſt's nature in ſubſtituting and generating a ſcar, in ſtead of the true skin, whileſt it conſume's the ſuperfluous humidities, condenſate's, incraſſate's, and binde's the next adjacent fleſh; therefore it ought to drie more powerfully then a ſarcotick. Epulotick medicines are of three kinds: the firſt is the true epulotick: which onely drie's and bind's. The ſecond is an acrid and biting epulotick, which, for that it waſte's the proud fleſh, is called ſo; and this muſt bee ſparingly uſed, and that onely to hard and ruſtick bodies. The third is that which onely drie's without aſtriction. The things whereof they conſiſt are theſe: *Ariſtolochia utraque, gentiana, iris, centaurium majus, pentaphyllon, ſymphytum majus, chamædrys, betonica, cauda equina, eupatorium, verbenaca, plantaginis & ſymphiti folia, gallæ, baccæ myrti, glandes & earum calices, balauſtia, cupreſsi nuces, malicorium, cortex quercûs, cortex tamaricis, cortex ligni aloës, acacia, colophonia, ſarcocolla, ſanguis draconis, ladanum, lithargyros, auri, argenti, ceruſa, plumbum uſtum, alumen uſtum, ruthia, ſquamma æris & ferri, & eorum ſcoria, ærugo, flos æris, æs uſtum et lotum, ſulphur vivum, chryſocolla, corali, bolus armenus, terra ſigillata, cineres buccenarum, oſtreorum, ſilicis, oſſa uſta et ſiccata, caries lignorum, ung. diapompholygos, ung. alb. rhaſis, de ſiccativum rubrum, emp. de ceruſa, de betonica, diacalcitheos, emp. nigrum.*

Three ſorts of Epulotick's.

Their uſe.

Wee uſe Epuloticks when as the ulcer is almoſt filled up, and equal to the adjacent skin. In the uſe of theſe wee muſt alwaies have reſpect to the tenderneſs and hardneſs of the bodie; for ſuch things as are corroſives to tender and delicate bodies, are epulotick to hard and ruſtick bodies. Alſo wee have much regard, whether the bodie bee plethorick or replete with ill humors, for ſuch do not eaſily admit cicatrization. Alſo it is moſt worthie of your obſervation, to mark whether the ulcer that is to bee cicatrized, bee fed or nouriſhed by the preſent defect of anie part, as the liver, ſpleen, lungs, or a *varix* lying about it. For it cannot bee cicatrized before theſe impediments (if anie ſuch bee) bee taken away. Laſtly, the callous lips of an ulcer, unleſs they bee ſcarified or ſoftened, hinder cicatrization. Therefore all ſuch defaults muſt bee taken away, and then ſuch an Epulotick applied, as may not by the too much drieneſs leav the ſcar too hollow, or the too little, leav it too high.

## CHAP. XVII.

### *Of Agglutinatives.*

AGlutinating, or agglutinative medicine is of a middle nature, between the Sarcotick and Epulotick, more ſtrong then the former, and weaker then the later, for it is drie to the ſecond degree. It by the drying and aſtrictive facultie, void of all deterſion, conjoin's parts that are diſtant, or rather lend's helping hands to nature the principal agent in this work. Glutinatives, whether they bee ſtrongly or weakly ſuch, do agglutinate either by their proper or accidental nature: Of this ſort are *Plantaginis omnes ſpecies, conſolida utraque, bugloſſa, millefolium, verbena, pimpinella, piloſella, cauda equina, ſempervivum, telephium, ſanicula, atractilis, folia quercûs et dracunculi, ſalix, ebulus, ſambucus, pentaphyllon, veronica, cortex pini, ulmi, palmæ quercûs, Aqua vitis, aq. è folliculis ulmi, ſuccus calaminthæ, vinum auſterum, terebinthina, myrrha, ſanguis draconis, bolus armenus, terra ſigillata, omnia denique acerba.*

Agglutinative medicines.

Glutinatives by accident.

Glutinatives by accident are thoſe that hinder defluction, and binde the part, as Sutures, Bandages, Reſt, rowlers, and the like. Wee uſe glutinatives in green, and as yet bloodie wounds, whence the Greeks call a glutinative medicine *Enæma*, although ſomtimes they are uſed to inveterate, malign, fiſtulous and ſinuous ulcers; for they hinder the defluction from comming to the lips of ulcers. You muſt conſider, when as you intend to applie them, whether the skin bee whole or no: For ulcers knit together, or heal more difficultly, if the skin bee rubbed off, or cut, or otherwiſe loſt. Neither ought you to bee unmindful of the forementioned cautions and indications drawn from the ſex, the tenderneſs or hardneſs of the affected bodie, the continuance and magnitude of the ulcer: for hence indication muſt bee taken, what the quantitie and qualitie of the medicine ought to bee.

## CHAP. XVIII.

### *Of Pyroticks, or cauſtick Medicines.*

THat medicine is ſaid to bee Pyrotick or Cauſtick, which by its acrimonie and biting, commonly conſiſting in an earthie conſiſtence, either ſuperficially corrode's, or more deeply eat's and putrifie's, or laſtly, burn's and conſume's the skin and fleſh, ſo that it even pierce's into callous and hard bodies. Therefore there are three degrees of Pyroticks; for ſom are termed cathæretick or corroding, for that they waſte the proud fleſh of an ulcerated or anie other part, and theſe are judged the weaker ſort of Pyroticks. Otherſom are termed Septick or putrefying, as thoſe which deſtroie and diſſolv the tender and new-ſprung-up fleſh, and raiſ bliſters in the skin, and theſe are more powerful then the chathæreticks. Laſtly, there are otherſom termed moſt powerful Eſcharoticks, which by their fierie and terreſtrial

Three degrees of Cauſticks.

reſtrial qualitie cauſ eſchars or cruſts; whereupon they are alſo termed *Ruptoria*, and potential Cauteries: Now all theſe differences are taken from that they are more or leſs powerful. For it oft-times happen's, that according to the different temper and conſiſtence of the parts, according to the longer or ſhorter ſtaie, a Cathæretick may penetrate as far as a Septick, and on the contrarie, an Eſcharotick may enter no farther then a Septick.

Cathæricks. Theſe are judged Cathæreticks, *Spongia uſta, alumen uſtum & non uſtum, vitriolum uſtum, calx mediocriter lota, ærugo, chalchanthum, ſquamma æris, oleum de vitriolo, trochiſci andronis, phaſionis, aſphodelorum, ung. Ægipticum, apoſtolorum, pulvis mercurii, arſenicum ſublimatum.*

Septicks and Veſicatories. Septicks and Veſicatories are, *Radix ſcillæ, bryoniæ, ſigill. beatæ Mariæ, bugloſſa, radix ranunculi, panis porcini, apium, riſus, lac tithymallorum, lac fici, euphorbium, anacardus, ſinapi, cantharides, arſenicum ſublimatum:* For all theſe weaken the native temper and conſiſtence of the part, and draw thereunto humors plainly contrarie to nature.

Eſcharoticks. Eſcharoticks or Cauſticks are *Calx viva, fæx vini cremata, & præcipuè aceti, ignis*, whereto are referred all Cauteries, as well actual as potential, whereof wee ſhall treat hereafter.

Their uſe. Wee uſe Cathæreticks in tender bodies and diſeaſes not verie contumacious; therefore by how much they are leſs acrid and painful, by ſo much oft-times they penetrate the deeper, for that they are leſs troubleſom by delaie; but wee uſe Septicks, and ſomtimes Eſcharoticks in ulcers that are callous, putrid, and of unexhauſted humiditie, but principally in cancers, carbuncles, and exceſſive hæmorrhagies. When as wee make uſe of theſe, the patient muſt have a convenient diet appointed, muſt abſtain from wine: laſtly, they muſt not bee uſed but with great diſcretion; for otherwiſe they may cauſ fevers, great inflammations, intolerable pains, ſwounings, gangreens, and ſphacels. Cauteries heedfully uſed, ſtrengthen and drie the part, amend an untameable diſtemper, dull the force of poiſon, bridle putrefaction and mortification, and bring ſundrie other benefits.

## CHAP. XIX.

### *Of Anodynes, or ſuch as mittigate or aſſwage pain.*

What pain is. BEfore wee treat of Anodyne medicines, wee think it fit to ſpeak of the nature of pain. Now pain is a ſorrowful and troubleſom ſenſ, cauſſed by ſom ſudden diſtemper, or ſolution of continuitie. There are three things neceſſarie to cauſ pain; The efficient cauſ, that is, a ſodain departure from a natural temper or union: the ſenſibleneſs of the bodie receiving the dolorifick cauſ: laſtly, the apprehenſion of this induced change, cauſſed either by diſtemper or union; for otherwiſe with how exquiſite ſoever ſenſ the bodie receiving the cauſ is indued with, unleſs it apprehend and mark it, there is no pain preſent. Hence is that Aphoriſm of *Hyppocrates, Quicunq; parte aliquâ corporis dolentes dolorem omninò non ſentiunt, his mens ægrotat*, that is, Whoſoever pained in anie part of their bodies do wholly feel no pain, their underſtanding is ill affected and depraved. Heat, cold, moiſture and drineſs, induce a ſodain change of temper; and heat and cold cauſ ſharp pain, drineſs moderate, but moiſture ſcarce anie at all: for moiſture cauſeth not pain ſo much by its qualitie, as it doth by the quantitie. Both the fore-mentioned qualities, eſpecially aſſociated with matter, as alſo certain external cauſſes too violently aſſailing ſuch as theſe that may cauſ contuſion, cut, prick, or too much extend. Wherefore pain is a ſymptom of the touch, accompanying almoſt all diſeaſes; therefore oft-times leaving theſe, they turn the counſel of the Phyſician to mitigate them, which is performed either by mitigating the efficient cauſſes of pain, or dulling the ſenſ of the part. Hereupon they make three differences of Anodynes: For ſom ſerv to cure the diſeaſ, otherſom to mitigate it, otherſom ſtupifie, and are narcotick. We term ſuch curative of the diſeaſes, which reſiſt, and are contrarie to the cauſſes of diſeaſes. Thus pain, cauſſed by a hot diſtemper, is taken away by oil of Roſes, Oxycrate, and other ſuch like things, which amend and take away the cauſ of pain, to wit the exceſs of heat. Pain cauſſed by a cold diſtemper, is amended by *Oleum Laurinum, Nardinum, de Caſtoreo.* Pain occaſioned by too much drineſs, is helped by *Hydrælium*, a bath of freſh and warm water. Laſtly, by this word Anodyne, taken in the largeſt ſenſ, we underſtand all purging medicines, Phlebotomie, Scarification, Cauteries, Cuppings, Glyſters, and other ſuch like things as evacuate anie ſtore of the dolorifick matter. But ſuch as are properly termed Anodynes, are of two ſorts: for ſom are temperate, others hot and moiſt in the firſt degree, and conſequently, near to thoſe that are temperate; theſe preſerv the native heat in the proper integritie, thus they amend all diſtemperatures; of this kinde are accounted Sallad oil, oil of ſweet Almonds, the yolks of eggs, and a few other ſuch like things, theſe ſtrengthen the native heat, that thus increaſed in ſubſtance, it may with the more facilitie or'ecom the cauſ of pain: beſides alſo, they rarifie, attenuate, digeſt, and conſequently evacuate both groſs and viſcid humors, as alſo cloudie flatulencies hindred from paſſing forth: ſuch are *flores chamæmeli, meliloti, crocus, oleum chamæmelinum, anethinum, oleum lini, oleum ex ſemine althææ, lumbricorum, ovorum, ex tritico, butyrum, lana ſuccida, ſuillus adeps, vitulinus, gallinaceus, anſerinus, humanus, ex anguilla, cunicula, & aliis. Lac muliebre, & vaccinum, mucago ſeminis lini, fænugræci, althææ, malvæ, vel ejuſmodi ſeminum decoctum:* as alſo *Decoctum liliorum, violariæ, capitis, pedum, & inteſtinorum arietis et hædi.*

What properly termed Anodynes are.

Nar-

Narcoticks improperly termed anodynes.

Narcoticks, or ſtupefying medicines, improperly termed Anodynes, are cold in the fourth degree, therefore by their exceſs of cold, they intercept or hinder the paſſage of the animal ſpirit to the part, whence it is that they take away ſenſ: of this ſort are *hyoſcyamus, cicuta, ſolanum manicum, mandragora, papaver, opium, arctiſſima vincula.*

The uſe of them.

You may make uſe of the firſt ſort of Anodynes in all diſeaſes, which are cured by the oppoſition of their contraries: but of the ſecond, to expugn pains that are not verie contumacious, that by their application wee may reſiſt defluxion, inflammation, the fever, and other ſymptoms. But whereas the bitterneſs of pain is ſo exceſſive-great that it will not ſtoop to other medicines, then at the length muſt wee com to the third ſort of anodynes. Yet oftimes the bitterneſs of pain is ſo great that verie narcoticks muſt bee applied in the firſt place, if wee would have the part and the whole man to bee in ſafetie. Yet the two frequent uſe of them, eſpecially alone without the addition of ſaffron, myrrh, *caſtoreum*, or ſom ſuch like thing, uſeth to bee verie dangerous: for they extinguiſh the native heat, and cauſ mortification, manifeſted by the blackneſs of the part. But intolerable pains, to wit, ſuch as are occaſioned by the exceſs of inflammation and gangrenes, may bee ſooner mitigated by opening a vein, purging and ſcarifying the part affected, then either by properly-termed anodynes or narcoticks, to wit, that pain may bee the remedie of pain. By purgers wee here underſtand not onely ſuch, as taken by the mouth, produce that effect; but alſo ſuch as outwardly applied perform the ſame, as thoſe whereof *Aetius* make's mention, As,

*Tetrab. 1. ſen. 3. cap. 35.*

Purgatives to bee externally applied.

℞. *pulpæ ſeu medul. colocynth. ſemin. eruc. rut. ſylveſt. elaterii, gr. cindii, lathyrid. expurgatar. galban. nitri, ceræ, ſingulorum,* ℥ iiii. *opopan.* ʒ ii. *terebinth.* ʒ vi. *terenda terito, et taurino felle paullatim irrigato, donec aptè imbibantur.* Then applie it about the navel even to the ſhare, for thus it will purge by ſtool; if on the contrarie you applie it to the bottom of the ſtomach, it will cauſ vomit. Another; ℞. *elaterii,* ʒiii. *colocynth. ſcammon. ſquammæ æris, radic. cucumer. agreſt. lathyrid. an.* ʒ i. *aut pro lathyrid. tithymal. ſuccum terito et cribrato, at cum oleo plurimum ſalis habente ſubigito; magnam indè pilam è lana confertam hoc medicamento illitam, umbilico aut lumbis applicato.* Or, ℞. *fellis taurin.* ʒ. i. *gr. cindii virid.* ℥ iv. *ſucci lupinor. virid.* ℥ ii. *euphorb.* ℥ i. *pulp. colocynth. tantundem ædip. vulpin. recent.* ℥ vi. *adip. viper.* ℥ ii ß. *ſtercor. muris,* ℥ iv *ſucci pæon. caſtor. ſingulor.* ʒ iv. *ol. liguſtrin.* ℥. vi. *ol. antiq.* ℥ i *fiat unguentum vel oleum.* It purgeth without trouble, and beſides the other commodities it alſo is good againſt diſtraction or madneſs. Two ſpoonfuls is the greateſt quantitie to bee uſed at one time, for in ſom, one is ſufficient: annoint therewith the navel and thereabouts, and a juſt purgation will enſue thereupon, which if it ſhall flie out beyond your exſpectation, you may foment the bellie with a ſponge moiſtened in warm wine and preſſed forth again, it will bee preſently ſtaied. Moreover *Fernelius lib. 7. methodi*, make's mention of a laxative ointment.

The compoſition of a purging oil and ointment.

## CHAP. XX.

### *Of the compoſition and uſe of Medicines.*

HItherto wee have ſpoken of the faculties of ſimple medicines, now wee think good to ſaie ſomthing of the compounding of them: for ſo by the Architect are had and known everie thing apart, and then hee ſettle's the workmen to the building, the conceived form of which hath been in his minde ever ſince hee did enterpriſe it. Therefore the compoſition of divers medicaments with their qualities and effects, is a mingling appointed by the art of the Phyſician. Hence therefore *rheum, aloë, roſa, abſynthium*, although they have divers ſubſtances and faculties, yet are notwithſtanding called ſimple medicines, becauſ they have that varietie from Nature, not from Art. But wee manie times call ſimple ſuch things as are compounded by art, as *oxym. ſimpl. oxyſacch. ſimplex*, as compared to greater compoſitions. And therefore oftentimes wee uſe compound medicines, becauſ alwaies the ſimple medicine alone, hath not ſtrength enough to oppugn the diſeaſ. For manie times the ſick labor with manifold, and not ſimple effects, from which there beeing taken a various indication, wee gather contrarie ſimple medicines, to applie to everie affect, in one compoſition. But oftentimes the nature of the part of the patient, or of the bodie affected, requireth another kinde of medicament which may bee proper for the remooving that diſeaſ; wherefore it is ſo made to oppugn the diſeaſ and not offend the bodie: and wee mingle manie other together, whoſe effects may temper one another. Moreover, the compoſition of medicines was neceſſarie, that becauſ thoſe things which have not a good taſte, color, or ſmell, by art or compoſition, might bee made more grateful. Compound medicines of which we intend to ſpeak, are Glyſters, Suppoſitories, *Noduli*, Peſſaries, Oils, Liniments, Ointments, Emplaſters, Cerats, Pultiſſes, Cataplaſms, Fomentations, Embrocations, Epithemates, Veſicatories, Cauteries, *Collyria, Errhina*, Sneeſing-powders, Maſticatories, Gargariſms, Dentifrices, Bags, Fumigations, Semicupiums, Baths. But firſt it is expedient that I ſaie ſomthing of weights and meaſures, with their notes, by which medicines commonly are meaſured and noted by Phyſicians.

*Gal. 2. ſimp. 4. de ſanit. tuend.*

The neceſſitie of compound medicines.

CHAP.

## CHAP. XXI.

*Of weights and measures, and the notes of both of them.*

EVerie weight ariseth from a beginning and foundation, as it were; for as our bodies do arise of the four first simple bodies or elements, into which they are often resolved: so all weights do arise from the grain, which is as it were the beginning and end of the rest. Now hereby is understood a barlie-corn or grain, and that such as is neither too drie, or overgrown with mouldiness, or rancid, but well conditioned, and of an indifferent bigness. A grain the beginning of all weight. What is meant by a grain.

Ten grains of these make an *Obolus*; two Oboli, or twentie grains make a scruple, three scruples, or sixtie grains make a dram, eight drams make one ounce, twelv ounces make one pound medicinal, which is for the most part the greatest weight used by Physicians, and which they seldom exceed; and it is resolved into ounces, drams, scruples, *oboli* and grains, which is the least weight. To express these weights we use certain notes, the pound is expressed by this note, ℔. the ounce by this ℥, the dram thus ʒ, the scruple thus ℈, the *obolus* with the beginning letter thus *obol.* the grain with his beginning letter thus, g. But sometimes wee measure the quantitie of medicines by measures and not alwaies by weights; and therefore wee express a han dful by this note, m. a pugil thus, p. number thus, n. and the half part of everie weight and measure is expressed by this note, ß. put after everie note of the aforesaid weights and measures of the same sort, as the half pound, ℔ ß. the half ounce, ℥ß and so of the rest. Moreover, in describing the same medicament we use the notes sometimes of weights, sometimes of measures; and therefore it is to bee noted that herbs, green or drie, are signed with these notes, m. p, but those which are drie and bee brought to powder, with these notes, ℥. ʒ. p, Roots, by these notes, ℥. ʒ. p. m. Barks, by these notes, ℥. ʒ. Seeds, by these notes, ℥. ʒ. Fruits, by these notes, an. p. ℥. ʒ. ℈. Flowers, by these notes, p. m. ℥. ʒ. Pulses, by these notes, p. ℥. ʒ. *Obolus.* A scruple. A dram. An ounce. A pound.

All other medicaments either drie or liquid, are described with these notes, ℔. ℥. ʒ. ℈ obol. g.

Having expounded these things, let us come to the description of compound medicines, beginning with glysters first, as the remedie which is most common and familiar, and almost chiefly necessarie of all others.

## CHAP. XXII.

*Of Glysters.*

A Glyster is an injection prepared first and properly for the gross intestines and funda ment; for sometimes glysters are used and made for the stomach, spleen, reins, bladder, womb, mesenterie, and also for the head, from whence oftentimes by sharp glysters, the hurtfull matter is brought downwards, as wee see in Apoplexies. Therefore there is no part of the bodie which receiv's not som benefit by glysters, but more or less according to the vicinitie they have with the bellie, and the strength of the glyster: for there are divers sorts of glysters, som emollients, other evacuating, som anodynes, som astringents, som cleansing, som sarcotick, and epulotick, and som may bee said to nourish. They may bee all made of the parts of plants or beasts, with compound medicines either solutive, or altering, and others according to the advise of the Physician. The parts of plants which are used to this purpose, are roots, seeds, leavs, flowers, fruits, shouts, juices, mucilages. Parts of beasts are yolks of eggs and whites, honie, chickens, capons, old cocks well beaten, heads and feet of sheep, the intestines, whey, milk, sewet, axungia, and such like in decoctions, wherein wee mingle and dissolv simple and compound medicines. Wee sometimes use without anie other medicament, to make a glyster with oil alone, as oil of nuts for the Colick, of whey alone, the decoction of the head and feet of the sheep alone, and of the decoction of Cicers and barlie do wee prepare glysters. What a glyster is. Differences of glysters. The materials of glysters.

The quantitie of a glyster is somtimes less according to the divers disposition of men and their diseases: for weak children the quantitie is less: for women with child, and in the colick, dysenterie, lyenterie, or when much hardened excrement, is within. But when we would abundantly moov the excrement, and there is nothing that may hinder, the dose of a glyster for the most part is half a pound, one pound, or three quarters of a pound. The glyster must bee injected warm or hot, more or less, according to the nature or condition of the sick: for beeing cold it offend's the intestines, and the neighboring nervous parts, which are cold of themselvs. It must bee given by degrees, for beeing injected suddenly, the winde which is usually in the guts will beat it back again, whence com's intolerable pain. But this will bee more clear by that wee shall teach concerning the differences of glysters, whereof there shall bee sufficient examples. Their quantitie

℞. *malv. violar. bismalv. acanth. an.* m i. *radic. alth. lilior. an.* ℥. i. *passul. ficuum ping.* ℥ ß. *fiat decoctio ap* ℔ i. *in qua dissolve cass. butyr. recent. an.* ℥ i. *ol. viol.* ℥ iii. *fiat Clyster.* An emollient glyster.

Glysters, that do evacuate, are prepared by the counsel of the Physician, and of divers Simples, being boiled for several purposes. Therefore if the humors bee cold which are to bee

A Glyſter to evacuate a cold phlegmatick humor.

bee evacuated, the Glyſter ſhall bee after this manner. ℞. *Salviæ, origani, abrotoni, chamæm. melilot. an.* m. ß. *ſeminum aniſi, fœnic. cumini, an.* ʒ iii. *ſemin. cartbar.* ʒii. Make a decoction of them, wherein diſſolv *Diaphon. Hier. Simpl. an* ʒß. *ol. aneth. chamæm. an.* ʒi. ß. *Mellis Antho. ſacc. rub. an.* ʒ i. *fiat Clyſter.*

*To evacuate Cholerick matter, prepare a Glyſter after this manner.* ℞. *quat. remollient. paret. Cichor. endi. an.* m. ß. *Semen. quat. frigid. Major. an.* ʒiii. *hordei integri.* p. i. Make a decoction of them, and diſſolv in it *Caſſ.* ʒ. i. *Ol. viol. mellis viol. an.* ʒ ii. *fiat Clyſter.*

*To evacuate melancholie, this Glyſter following will bee uſeful.* ℞. *Fumiter. Centaur. minoris, Mercurialis, an.* m. i. *Polyp. Qu. folicul. ſennæ, an.* ʒ iii. *ſeminis agni caſti, Thymi, an.* ʒ ii. Make a decoction and diſſolv therein, *Confect. Hamech.* ʒ ß. *Caſſ. recèns extract.* ʒ iii. *olei violati, lilior, an.* ʒß. *Sacc. rub. mellis viol. an.* ʒiß. *ſalis,* ʒi. And thoſe Glyſters do not onely evacuate the humors that offend, but alſo correct the diſtemper of the bowels and inward parts. For the Glyſters deſcribed againſt pitutious and melancholick matter, help the cold diſtemper; but that which is for choler, the hot diſtemper. Purging medicines, which are diſſolved in the decoction of Glyſters, are verie ſtrong, as, *Confect. Hamech. Benedicta, Diaprun. Solutivum, Diaphœnicon,* beeing uſed from ʒ.vi. to ʒi. at moſt: but the weaker and more gentle are *Catholicon. Caſſia, Hiera ſimplex,* from ʒvi. to ʒii. at moſt..

An Anodyne Glyſter.

*An Anodyne Glyſter is uſually made without ſuch things as purge or evacuate: as,* ℞. *Flor. Chamæm. melil. Aneth. an.* p. i. *rad. Biſmal.* ʒi. boil them in Milk, and to the decoction add *Mucaginis ſeminis lini fœnugræci extractæ in aqua Malvæ* ʒii. *ſaccari albi, olei anethi, chamæmeli, an.* ʒi. *vitellos ovorum duos, fiat Clyſter.* Theſe Glyſters ſhould bee kept longer in the bodie, that ſo they may more eaſily mitigate pain. *The example of an aſtringent Glyſter.*

An Aſtringent Glyſter.

℞. *Equi ſeti plantag. poligami. an.* m. i. boil them *in lacte uſtulato,* to ʒxii. to the decoction ſtrained add *Bole armeni, ſanguinis draconis, an.* ʒii, *olei roſati,* ʒii. *album. ovorum duorum, fiat Clyſter.* Wee uſe theſe kinde of Glyſters in Dyſenteries, and in the immoderate flux of the Hæmorhoid veines, having firſt evacuated the uſual excrements. Glyſters, which be ſarcotick, epulotick, and cleanſers of the greater guts, and fit for the curing of ulcers, are to bee prepared of ſuch medicines as are deſcribed before in their proper Chapters.

Nouriſhing Glyſters.

Alimentarie Glyſters are made of the decoction of Chickens, Capons, Cocks, beeing boiled to a gellie, and ſtrongly preſt forth. They are alſo prepared of Marrow, gellie, which are not altogether ſo ſtrong as thoſe which are commonly taken by the mouth, becauſ the facultie of concoction in the guts, is much weaker then that of the ſtomach. Oftentimes alſo the matter of theſe kinde of Glyſters are prepared in wine, where there is no pain of the head or fever, but more frequently in the decoction of Barlie, and in Milk, adding the yolks of Eggs, and ſom ſmall quantitie of white ſugar, leſt by the cleanſing facultie it move the guts to excretion. And therefore Sugar of Roſes is thought better, which is conceived to ſomwhat binding. Here you may have example of ſuch Glyſters. ℞. *Decoctionis Capi perfectè cocti* ℔ i. ß. *ſaccari albi,* ʒß. *miſce, fiat Clyſter.* ℞. *Decocti Pulli & Galatinæ, an.* ℔.ß. *vini opt.* ʒiv. *fiat Clyſter.* ℞. *Decocti hordei mundati, & in cremorem redacti* ℔.ß. *lactis boni* ℔ i. *Vitellos ovorum duos, fiat Clyſter.*

Their uſe.

We uſe theſe kinde of Glyſters to ſtrengthen children, old and weak men, and bodies which are in a Conſumption. But in the uſe of theſe there are three things to bee obſerved: Firſt, that the fæculent excrements may bee taken away, either by ſtrength of nature, or by art, as by a ſuppoſitorie, or an emollient Glyſter, leſt the alimentarie matter beeing mingled with them, ſhould ſo bee infected and corrupted. The other is, that there bee great quantitie given, that ſo ſom may aſcend to the upper guts. The third is, that the ſick ſleep after the taking of it; for ſo it is more eaſily converted into nouriſhment, and the elementarie matter is better kept: for ſleep hindereth evacuations. In Glyſters of this kinde wee muſt beware of Salt, Honie, and oil; for the two firſt provoke excretion by their acrimonie, and the laſt by his humiditie doth relaxate and lubricate. They, who think no kinde of Glyſter can nouriſh or ſuſtein the bodie, relie upon this reaſon: That it is neceſſarie whatſoever nouriſheth, ſhould have a triple commutation or concoction in the bodie: firſt, in the ſtomach; ſecond in the liver: thirdly, in all the members. But this opinion is repugnant to reaſon and experience: to reaſon, for that a certain ſenſ of ſuch things as are defective, is implanted in all and everie of the natural parts of our bodie. Therefore ſeeing nutrition is a repletion of that which is emptie, without doubt the emptie and hungrie parts will draw from anie place that nouriſhment that is fit and convenient for them, and in defect thereof, whatſoever they meet with, which by anie familiaritie may aſſwage and ſatisfie their deſire. But the alimentarie Glyſters, by us deſcribed, conſiſt of things which agree verie well with the nature of our bodies, and ſuch as are boiled and ordered with much art, ſo to applie the chylification to bee performed in the ſtomach. Therefore they may bee drawn in by the meſeraick veins of the guts; which according to *Galen,* have a certain attractive facultie. And thence they may bee eaſily carried through the gate-vein, liver, and ſo over the whole bodie. And experience teacheth, that manie ſick people, when they could take nothing by the mouth, have been ſuſteined manie daies by the help of theſe kinde of Glyſters. What is more to bee ſaid? Wee have ſeen thoſe who have taken a Suppoſitorie by the fundament, and vomited it at the mouth; by which it alſo appeareth, that ſom-

Their Argument that denie Glyſters to nouriſh.

Confuted firſt by reaſon.

Secondly, by experience.

ſomthing may flow without danger of the ſick from the guts into the ſtomach.

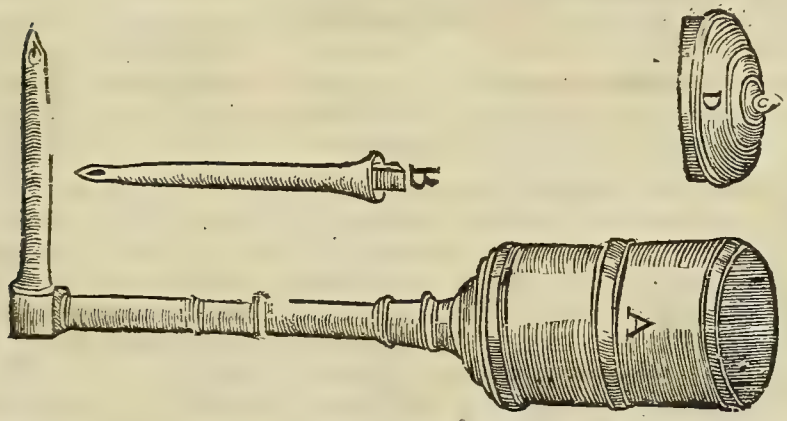
Commonly they give Glyſters anie hour of the daie, without anie reſpect of time, but it ſhould not bee don unleſs a great while after meals, otherwiſe the meat, being hindered from digeſtion, will bee drawn out of the ſtomach by the Glyſter.

Glyſters are uſed to help the weaker expulſive faculties of the guts, and by conſequence alſo of the other parts, both that ſuch as through want of age, and old people, and ſuch as by reaſon of great imbecilitie by ſickneſs cannot admit of a purging medicine, may by this means at leaſt eaſ themſelvs of the trouble and burden of hurtful humors. *Galen* hath attributed to Storks the invention of Glyſters, which with their bils, having drunk Sea-water, which from ſaltneſs hath a purging qualitie, waſh themſelvs by that part, whereby they uſe to bring away the excrements of their meats, and of the bodie. But a Glyſter is fitly taken after this manner: whileſt the Syringe is expreſſed, let the patient hold open his mouth; for by this means all the muſcles of the *Abdomen*, which help by compreſſion the excretion of the guts, are relaxed, Let him wear nothing that may gird in his bellie, let him lie upon his right ſide, bending in a ſemicircular figure; and ſo the Glyſter will the more eaſily paſs to the upper guts, and (as it were) by an overflowing, wet and waſh all the guts and excrements. It hap'neth otherwiſe to thoſe who lie upon their left ſide; for the Glyſter beeing ſo injected, is conceived to abide, and (as it were) to ſtop in the *Inteſtinum rectum*, or *Colon*, becauſ in this ſite theſe two inteſtines are oppreſſed, and as it were ſhut up with the weight of the upper guts. A little while hee may lie upon his back after hee hath received the Glyſter, and preſently after hee may turn himſelf on either ſide. And if there bee pain in anie part, ſo long as hee is able hee may incline to that ſide. Moreover, becauſ there are manie who cannot by anie reaſon bee perſwaded to ſhew their buttocks to him that ſhould adminiſter the Glyſter, a fooliſh ſhamefaſtneſs hindering them: therefore I thought good in this place to give the figure of an Inſtrument, with which one may give a Glyſter to himſelf, by putting up the pipe into the fundament, lifting the buttocks a little up. The pipe is marked with this letter *A*. The bodie of the Syringe, whereinto the Glyſter muſt bee put, with this Letter *B*.

The common uſe of glyſters.

The ſick having received the glyſter, muſt turn to their ſide grieved.

*The figure of a Glyſter pipe and Syringe, by benefit whereof a man may give himſelf a Glyſter.*




## CHAP. XXIII.

### *Of Suppoſitories, Nodules, and Peſſaries.*

A Suppoſitorie is a certain medicament, formed like unto a tent, or gobbet of paſte, ſuch as is commonly uſed to fat Fowl. It is put into the fundament, that it might excite the ſphincter-muſcle to ſend forth thoſe excrements which are knit in the guts. Antiently it had the form of an Acorn, whence it is called to this daie *Glans*. The Suppoſitories, wee now uſually make, have the form of a Peſſarie, that is round and longiſh, in the form of a wax-Candle. They are either weak, ſtronger, or ſharp; the weak are made of the ſtalks or the roots of Beets, of Lard, boiled Honie with Salt, or of Caſtle-ſope. The ſtronger of purging powders, as, *Hiera* with Salt and Honie. The ſharp with Scamonie, *Euphorbium*, *Coloquintida*, and like things powdred, and with Honie, or the juices of ſharp herbs, or mingled with the gals of beaſts. It is commonly made thus: as, ℞. *Mellis* ℥i. *Salis aut pulveris alterius irritantis* ℥i.

The differences.

The form.

℞. *Mellis cocti* ℥i. *pul. Colocynthidos* ℈ ß, *Salis gemmæ*. ℈i. *fiat Suppoſitorium*. Wee uſe Suppoſitories, when the ſick by his infirmitie is unwilling, or not able to bear or away with a Glyſter, as in burning Fevers: or, when as one beeing injected, is ſlow, and reſteth in the guts. And wee uſe the ſharper Suppoſitories in ſoporiferous affects of the head, that they might provoke the dull facultie of the guts to expulſion. As alſo, when the condition of the diſ-

The uſe.

eaſ is ſuch, that by the uſe of Glyſters there is manifeſt hurt; as, in an *Enterocele*, where the gut ſo ſwel's, that over and above it bee filled by the glyſter infuſed, it would the more preſs the *Peritonæum*, ſo that ſtraight-waies by the relaxed or broken part it might eaſily bee devolved into the Cod.

Nodules have the ſame uſe with Suppoſitories, and are oftentimes ſubſtituted in ſtead of Glyſters. They are made of gentle medicines, as the yelks of Eggs with a little Salt and Butter, or of Gall and Honie tied up in a cloth in the form of a Filbert, the ſtring of it may hang forth, whereby the Nodule in the fundament may bee drawn forth. This deſcription may bee an example of Nodules: ℞. *Vitellum unius ovi, cui adde ſalis modicum, fellis vervecis, mellis an.* ʒß. *butyri* ʒiii. *miſce, fiant Noduli filo appenſi.*

The form of a Nodule.

Peſſaries.

A Peſſarie is groſſer than a Suppoſitorie, and is appointed for the womb, beeing made with Cotton-wool or Silk ſteeped in ſom medicament, and then put into the neck of the womb.

Their uſe.

A peſſarie is uſed either to ulcers of the neck of the womb, or for the procuring or ſtoping of the *Menſtrua*, or againſt ſordid and hurtful humors of the womb cauſing hyſterical paſſions, and therefore to bee waſted away and evacuated. Therefore in the compoſition of peſſaries are uſed gums, juices, ſeeds of herbs, roots, and manie other things, according to the adviſe of the Phyſician; they are alſo made of a ſolid conſiſtence, the bigneſs of a finger, that they may enter into the neck of the womb; theſe beeing tied with a ſtring, which muſt hang forth to pluck it out withal when evaſion ſerv's. This following may bee an example of their deſcription. ℞. *myrrh. aloes, an* ʒ i. *ſabin. ſemin. nigel. arthemiſ. an.* ʒii. *radic. ellebor. nig.* ʒi. *croci,* ℈ i. *cum ſucco mercurial. & melle fiat peſſus*; let it bee tied to the thigh with a thred. Or thus, ℞. *maſtich. thurii, an.* ʒ iii. *alum, roſ. rub. nuc. cupreſ. an.* ʒii. *ladan. hypoci. ſumach, myrtil. an.* ʒ iii. *fiant peſſi cum ſucco arnogloſ. & cotoniorum.* According to this example others may bee made for to mollifie, to binde, to cleanſ, to incarnate, to cicatrize and cover the ulcers of the womb: they are to bee put up when the patient lieth in bed, and to bee kept all night.

Peſſaries are alſo made of medicinable powders, not onely mixed with ſom juice, but alſo with thoſe powders alone beeing put into a little bag of ſom thin matter, beeing ſtuffed with a little cotton that it might bee of a convenient ſtifneſs, and this kind of peſſaries may bee uſed profitably in the falling of the mother.

*An example of one mentioned by* Rondeletius *in his book of inward Medicines, is as followeth.*

Againſt the ſuffocation of the Mother.

℞. *Benioini, ſtyracis, caryoph. an.* ʒi. *gal. moſchi,* gr. vi. *fiat pulvis*; this beeing made up with cotton may bee put up into the bodie.

## CHAP. XIIII.

### *Of Oils.*

PRoperly and commonly wee call oil that juice which is preſſed forth of Olives; but the word is uſed more largly, for wee call everie juice of a fluxible, unctuous, and airie ſubſtance, Oil. There are three differences of theſe oleaginous juices: The firſt is of thoſe things which yield oil by expreſſion, as well fruits as ſeeds beeing bruiſed, that by beating the oilie juice may bee preſſed forth; ſom are drawn without fire, as oil of ſweet and bitter almonds, oil of nuts, of *palma Chriſti*. Others are made to run by the help of fire, by which means is gotten oil of baies, linſeed-oil, rape-oil, oil of hemp, and ſuch like: The manner of drawing oil from ſeeds is ſet down by *Meſue* in his third book.

The making oils by infuſion

The ſecond ſort of thoſe oils which are made by the infuſion of ſimple medicines in oil, wherein they leav their qualities: and this is don three ſeveral waies, the firſt is by boiling of roots, leavs, tops of flowers, fruits, ſeeds, gums, whole beaſts, with wine, water, or ſom other juice, with common or anie other oil, until the wine, water, juice bee conſumed, which you may perceiv to bee perfectly don, if you caſt a drop of the oil into the fire, and it maketh no noiſ but burneth. It is to bee remembred that ſomtimes the ſeeds or fruits are for a certain time to bee macerated before they are ſet to the fire; but it muſt bee boiled in a double veſſel, leſt the oil partake of the fire.

After this manner is made *oleum coſtinum, rutaceum, de croco, cydoniorum, myrtillorum, maſtichinum, de euphorbio, vulpinum, de ſcorpionibus*, and manie others. The ſecond is by a certain time of maceration, ſom upon hot aſhes, others in horſ-dung, that by that moderate heat the oil might draw forth the effects of the infuſed medicines into it ſelf. The third is by inſolation that is, when theſe or theſe flowers, beeing infuſed in oil, are expoſed to the ſun, that by the heat thereof the oil may change, and draw into him ſelf the facultie of the flowers which are infuſed: of this kinde are oil of roſes, camomil, dill, lilies, of water-lilies, violets, and others, as you may ſee in *Meſue*.

The manner of oils by reſolution.

The third kinde is properly that of the Chimiſts, and is don by reſolution made after divers manners, and of this ſort there are divers admirable qualities of divers oleaginous juices, whether they bee made by the ſun or fire, or putrefaction, as wee ſhall ſpeak in his place hereafter.

Wee

Wee use oils when wee would have the virtue of the medicament to pierce deep, or the substance of the medicines mingled with the oil to bee soft and gentle. Moreover, when wee prepare oils that should bee of a cooling qualitie, the common oil of the unripe Olive is to bee used: of that should the oil of roses bee made.

Again, when wee would prepare oils of heating qualities, such as are *Oleum philosophorum*, or of Tiles, sweet and ripe oil is to bee chosen.

## CHAP. XXV.

### *Of Liniments.*

A Liniment is an external medicine of a mean consistence, between an oil and an ointment, for it is thicker then an oil; for besides oil it is compounded with butter, axungia and such like, which is the reason why a liniment is more efficacious in ripening and mitigating pain, then simple oil. The varieties of liniments are drawn from their effects, som cool, others heat, som humect, som ripen, others by composition are made for divers uses. The matter whereof they a re usually made, is oil, axungia, suet, butter, all those things which have an oilie substance or consistence, as *styrax liquida*, turpentine, the mucilages of fenugreek, marsh-mallows, marrow, and other like. To these are sometimes added powders of roots, seeds, flowers, rindes, metals, but sparingly, that the liniment may bee of a liquid consistence. What a liniment is.

*An example of a liniment that is good to attenuate, heat, and digest, is this that followeth.*

℞. *ol amygd. amar. lilior. an.* ℥i. *axung. anat. gallin. an.* ℥ß. *butyr. sal expert.* ℥i. *mucag. sem. alth: fœnugr. extract. in aq. hyssop. an.* ℥ ß. *pulver. croci, ireos, an.* ℈i. *fiat linimentum.*

*This may bee an example of a liniment to humect and mollifie.*

℞. *ol. amygd. dulc.* ℥ii, *axung. human.* ℥ ß. *mucag. semin. malv. extract. in aq. parietar.* ℥ ß. *fiat linimentum:* you may add a little saffron. There bee manie others like these which ma y bee made for divers affects. They are easily applied to everie part of the bodie, becaus they are not so liquid as oils: the reason is, they are more agreeable to anie of the parts. If they bee to enter into anie crooked narrow passage, such as the ear, they must bee more liquid, and have more oil: if they bee to stick on the part, they will admit of more axungia and suet.

They are deceived who think that the difference between liniments and ointments is, that there is no wax in liniments as there is in unguents; for there bee som unguents which admit not anie wax to bee added, as *ægyptiacum*, and all such as are used in gangreens, and all sorts of putrid ulcers; becaus to these kinds of diseases all fattie things, as oils, fats, rosins, and wax, are enemies. Therefore wee substitute in the place of them in *ægyptiacum*, honie and verdigreas; for of these it hath his consistence, and his qualitie of cleansing.

## CHAP. XXVI.

### *Of Ointments.*

Ointments are of a more solid consistence then Liniments, and are therefore of more force. Their differences ate partly taken from their effects; for som heat, others cool, som drie, and som humect, som cleans, som corroborate, som waste dead flesh, and others cicatrize, partly from the varietie of colors, partly from the first invertors, as *Album rhasis*, *Desiccativum rubrum*: partly from the number of the simple medicaments whereof they bee made, as, *Tetrapharmacum*, *Tripharmacum*, or *Nutritum*: partly from that medicament which is principal in the composition, hence are they called, *Unguentum de Lythargyro*, *de Minio*, *Diapompholigos*, and such like. They are compounded of herbs, roots, seeds, fruits, metals, and part of Beasts; the juices and other liquid things beeing consumed away by boiling, as wee have said in the Chapter of compound Oils. Herbs, and the parts of them, if they bee drie, must bee powd'red, and also metals; but beeing green, they are boiled and strained forth, and the juice so pressed is wasted by boiling. Gums and Rosins som are powdred, others beeing put to som convenient liquor are dissolved by fire: So wax is dissolved in the Oil. In the composition of unguents this proportion is usually observed, that for one ounce of powder, two ounces of Wax, and eight of oil is added: notwithstanding for that Wax serveth onely to the consistence of the ointment, it is better to leav the quantitie to to the will of the Apothecarie; but hee may bee more sparing in adding Wax to the ointments in Summer then in winter, for the heat of Summer, drying them, addeth to the consistence; by examples propounded, these common precepts will more plainly appear. Ointments and their differences.

℞. *Olei ros.* iv. *pil. lepor. bol. armen. terræ sigil. an.* ℥i. *bal. Gallar. an.* ℥ß. *tritis terendis, & simul mixtis, addiâ cerâ quod sufficit, fiat unguentum.* Here wee must observ, that there bee three waies of making ointments: The first is of those which are made onely by stirring or grindeing in the Mortar without anie fire, and so is made *Unguentum nutritum*. The second is, when wee dissolv Wax in Oil, Fat, or som such substance with fire: and beeing all dissolved, wee mingle the powders according to the proportion wee noted before. After which manner are made *Unguentum Aureum*, *Basilicon*, *Diapompholigos*, *Desiccativum rubrum*, *unguentum adstringens.*

*Enulatum.* The third ſort is, when wee bruiſe herbs with a Peſtell, and mingle them with Axungie, boiling them together, and then ſtraining them, and the ointment is that which is ſtrained. Therefore let us proceed to explain this by examples.

*unguentum nutrium.* ℞. *Lythar. auri triti & loti* ℔ß *olei roſ.* ℔i. *aceti roſ.* ℥iv. *fiat Unguentum.* Firſt, wee put the Lytharge into the Mortar, powring in a little Oil, and working it with a Peſtil, that it may grow thick, then with the Oil wee put a little Vineger, continually working, until they mingle into one bodie, now and then between whiles adding ſomtimes a little Oil, ſomtimes a little Vineger, until the whole bee brought to the conſiſtence of an ointment. If of an ointment of this kinde thou wouldeſt make a black plaſter, by degrees conſume all the Vineger, ſo ſhall the plaſter ſhine and grow black.

*unguentum aureum.* ℞. *Ceræ citr.* ℥vi. *olei boni* ℔ii. *tereb.* ℥ii. *reſin. & coloph. an.* ℥iß. *olib. maſtich. an.* ℥i. *croci,* ℥i. *fiat Unguentum.* Firſt, diſſolv the Wax with a good part of Oil, then add the Roſin and Colophonie broken ſmall. Theſe beeing diſſolved, take the compoſition from the fire, and then add the Turpentine; when the whole is ſomwhat cooled, add the *Olibanum* and Maſtick beeing finely powdred, then the Saffron, which ſhall bee macerated in the reſt of the Oil.

*ung. Tetrapharmacum, ſeu Baſilicum.* Tetrapharmacon is ſo called, becauſ it is made of four ſimple medicines, Wax, Roſin, Pitch, Tallow, of each a like qnantitie, and ſo equally mixed.

℞ *Reſin. picis nigr. adip. vituli. & ceræ an* ℥ii. ß. *Olei veteris olivarum maturarum,* lb. i. ß. or if you would have it harder, lb. i. that ointment is alſo called *Baſilicon*, the Wax beeing cut ſmall and diſſolved in Oil, then add the reſt of the things, which beeing diſſolved, thou ſhalt have the deſired ointment.

*ung. Diapempholygos.* ℞. *Olei roſ.* ℥ix. *cer. alb.* ℥iii. *ſucci ſolani hortenſis*, ℥iv. *Ceruſ. lot.* ℥i. *Pompholygos, plumbi uſti & loti, olib. puri, an.* ℥ß *fiat unguentum.* Diſſolv the Wax in the Oil with a gentle fire, then you ſhall take it from the fire, and add to the reſt of the ingredients, working them together in a ſtone-Mortar, powring on the juice by degrees, at leaſt ſo much of it as will incorporate.

*ung. deſiccativum rubrum.* ℞. *Lap. calam. ter. ſig. an.* ℥ii. *Litharg. auri, ceruſ. an.* ℥iß. *Camphor.* ℥ß. *ceræ,* ℥iiß. *Olei roſat. viol. an.* ℥iii. *fiat Unguentum.* Diſſolv the Wax in the Oyl, then ſet it to cool, and work in the powders with a ſpatter, and at laſt add the Camphir diſſolved in a little Oil of Roſes, or Roſewater.

*ung. Enulatum.* ℞. *Rad. enul. campan. coct. cum aceto & contuſ. ut decet* lb. ß. *Axung. porci, olei commu. an.* ℥iß. *argen vivi exſtincti, et tereb. lot. an.* ℥i. *ſal. commu. pulverati,* ℥ii. incorporate them according to art. The boiled roots muſt bee drawn through a Sieve, which beeing boiled by a gentle fire with the *Axungia*, muſt bee continually ſtirred, then put to the Salt with Oil and Wax: when you ſet it from the fire to cool, then add the Quickſilver, beeing killed with a little *Axungia* and Turpentine.

*ung. Album Rhaſis.* ℞. *Olei roſat.* ℥ix. *ceruſ. alb.* ℥iii. *cer. alb.* ℥ii. make it thus: Let the Ceruſs bee finely powdred, and put into the Oil and Wax whil'ſt it is hot, and ſo work the whole together, until they ſhall bee brought into a bodie.

*De Althæa.* ℞. *Rad, Alth.* lb. i. *ſemi. lini, fænugr. an.* lb. ß. *Scillæ* ℥iii. *Olei com.* lb. ii. *cer.* lb. ß. *terebinth: gum. heder. galb. an.* ℥i. *coloph et reſin.* ℥iii. The roots and ſeeds beeing bruiſed, are infuſed for three daies in five pints of water; boil them until three ounces bee conſumed, and then draw forth the Mucilage, and boil it with the Oil, then add Wax cut ſmall: theſe beeing taken from the fire, the *Galbanum* beeing diſſolved with Vineger, and mingled with the Turpentine, muſt bee added together with the Gum *Hederæ*, Colophonie, and Roſin.

*ung. Populeum.* ℞. *Ocul. populi arb.* lb. i. ß *fol. papaveris nigr. Mandrag. hyoſcami, lactucæ, ſempervivi parvi et magni, violæ nigræ, ſolani, umbilici veneris, ſeu cymbalar. bardanæ, an.* ℥ ß. (*Cordus, Fernelius, et Nicolaus ſingulorum* ℥iii. *præſcribunt*) *Adipis ſuilli recentis ſalis expertis*, lb. ii. *vini boni*, lb. i. *fiat Unguentum.* The Poplar buds and Violet leavs muſt bee bruiſed and macerated in the *Axungia* for the ſpace of two moneths, that is until the reſt of the herbs bee readie; for they cannot bee gathered before the Summer time, but the Poplar buds and Violets may bee had in March. They muſt bee bruiſed and mingled verie well, and ſet in a warm place for eight daies; then add one pint of ſtrong Vinegar, and boil them till it bee conſumed, which may bee perceived by caſting a little of it into the fire, then ſtrain it forth, & put up the Ointment.

*ung. Apoſtolorum.* ℞. *Tereb. cer. alb. reſ. an.* ℥xiv. *Opopanacis, floris, ſeu viridis æris (nam hic flos æris non propriè accipitur pro granulis, quæ ſcintillarum inſtar ab ære exiliunt dum à fabris ferrariis aqua tingitur: ſed pro viridi æris uſurpatur, cujus contra maligna ulcera notæ ſunt vires, contra quæ omnino id Unguentum eſt comparatum) an.* ℥ii. *ammon.* ℥xiv. *ariſtol. lon. thuris maſculi an.* ℥vi. *myrrhæ et galbani an.* ℥iii. *bdelli,* ℥vi. *Lytharg.* ℥ix. *olei* lb. ii. *fiat Unguentum.* The Litharge is to bee mingled with two ounces of Oil for the ſpace of five hours, and with a gentle fire to bee boiled until it com to the conſiſtence of honie, and bee alwaies ſtirring, leſt it burn: beeing taken from the fire and warm, the Wax and the Roſin, beeing diſſolved, with the reſt of the oil, muſt bee added. Then put to it, when it is cooling, the Gums diſſolved in Vineger, boiled and incorporated with the Turpentine. Then the *Ariſtolochia*, Myrrh, and Frankincenſ are to bee mingled, and laſt of all the Verdigreaſ, beeing in fine powder, and ſprinckled in: and ſo the unguent is made.

*Comitiſſa.* ℞. *Cortic. median. caſtan. cortic. median. querc. cortic. median. gland. mirtil. equeſ. cortic. fabar. acinor.*

*acinor, uvar. ſorbor. ſiccor. immatur. meſpillor, immaturor. rad. chelidon. folior. prunor. ſylveſt. an.* ʒ iß. *Aquæ plantaginis,* ℔.viii. *cer. nov.* ʒviii ß. *olei myrtillor.* ℔. iiß. Then theſe things which follow, beeing finely powdred, are to bee ſprinkled in.

℞. *Pulveris corticis mediani caſtan. corticis mediani gland. cortic. median. arb. gland. id eſt, querc. gallar. an.* ʒi. *Cineris oſſ. cruris bovis, myrtill acinor. uvar. ſorbor. ſiccor. an.* ʒ ß. *Trochiſcorum de carabe,* ʒii. *fiat Unguentum.* Firſt, make a decoction *corticis mediani arboris querċus, acini uvar. rad. chelid. meſpil. ſorbor. equiſ. ſeminis myrtil. folior. pruni ſylveſtris. cort. fabar. cortic. mediani gland. cortic. caſtan. & gallar.* in the Plantain water for the ſpace of two hours, then ſtrain it, and divide the liquor into nine parts, waſhing the Wax, diſſolved with the oil of Myrtils ſeven times; the liquor beeing all ſpent, and the Wax and Oil beeing melted, then inſperge the powders, *Cruris bovis, aſſium, cortic. median. querc. median. cortic. gland. caſtan. gallar ſorbor. me ſpil. feminum myrtil. acinor. uvar.* and at the laſt the Trochiſces *carab.* after this manner ſhall you make this Ointment.

℞. *Olei abſinth, maſtich. de ſpic. roſat. an* ʒß. *pulver. abſinth. roſ. major. menth. an.* ʒi. *Caryoph. cinam. maſtich. galang. an.* ʒi. Powder thoſe things which are to bee powdred, and with a ſufficient quantitie of Wax make a ſoft ointment, wherewith let the ſtomach be annointed one hour before meals continually. *Ung. proſtomacho.*

℞. *Cer. alb.* lb.ii. *ceruſ. litharg. auri, an.* lb.i. *myrrh. medul. cervi, an.* ʒii. *thuris,* ʒi. *olei,* lb. ß. Boil the Litharge in the oil to a mean conſiſtence, then add to the Wax and Ceruſs, and when it will not ſtick to the fingers, take it from the fire, and put in the *Medulla*, when it beginneth to cool, the *Myrrha* and *Thus*, beeing finely powdred, muſt bee caſt in by little and little, and the ointment may bee put up for uſe. The chops of the fundament, and remollient Peſſaries are likewiſe made of it, and it is verie good againſt the bitings of mad Dogs, and the punctures of nervs and tendons, keeping wounds ſo that they do not agglutinate. *ung. ad morſus rubioſos, ex li. 1 Gal. de comp. ſec. genera.*

℞. *Picis pinguis,* lb.i. *Opopanacis in aceto forti, oleo liliorum, & veteri porci axungia cocti,* ʒiii. *fiat Unguentum. Oleum ex ſinapi* is good againſt thoſe bitings of mad beaſts and punctured nervs: for it doth open wounds when they are cicatrized. Ointments are uſed to overcom the contumacie of a ſtubborn evil by their firm and cloſe ſticking to, eſpecially if there ſhall need no medicine to go further into the bodie. 3. *De comp. med. ſec. gen.*

## CHAP. XXVII.

### *Of Cerats and Emplaſters.*

SUch affinitie there is in the compoſition of a Cerat and Emplaſter, that oftentimes the one is taken for the other, as is uſually done in Ointments and Liniments. A Cerat is a compoſition more ſolid and hard then an ointment, and ſofter then a plaſter, having his name from Wax, which taking away the fluidneſs of the oil, bringeth him to his conſiſtence. The differences of Cerats are taken ſom from the parts by which they are called, as *Ceratum ſtomachicum:* ſom from the effects, as *Ceratum refrigerans Galeni:* Others from the ſimple medicaments which are the chief in the compoſition, as *Ceratum Santalinum.* The proper matter of Cerats is, new Wax and Oils, beeing appropriated to the grief of theſe, or thoſe parts; ſo that Liniments and Ointments do ſcarce differ from Cerats, if they admit of Wax: for if ointment of Roſes ſhould have Wax added to it, it were no longer an Ointment but a Cerat. What a Cerat is. The differences.

Cerats, which are made with Roſins, Gums, and Metals, do rather deſerv the names of Emplaſters then Cerats. And therefore *Ceratum ad Hernias,* wee commonly call *Emplaſtrum contra Rupturam.* If that pain or inflammation do griev anie part, wee make Cerats of plaſter, diſſolved with Oil, leſt that the more hard and heavie conſiſtence of the Emplaſter ſhould bee troubleſom to the part, and hinder perſpiration: and therefore laying aſide the compoſition of Cerats, let us ſpeak of Emplaſters.

An Emplaſter is a compoſition which is made up of all kinde of medicines, eſpecially of fat and drie things, agreeing in one groſs, viſcous, ſolid, and hard bodie ſticking to the fingers. The differences of Emplaſters are taken from thoſe things, which the varietie of ointments are taken from. Of thoſe things which go into the compoſition of an Emplaſter, ſom are onely uſed for their qualitie and facultie, as Wine, Vinegar, Juices. Others to make the conſiſtence, as Litharge (which, according to *Galen,* is the proper matter of Emplaſters) Wax, Oil, and Roſin. Others bee uſeful for both, as Gums, Metals, parts of beaſts, Roſin, Turpentine to digeſt, to cleanſ, and drie. Of Emplaſters, ſom are made by boiling, ſom are brought into a form without boiling; thoſe which bee made without fire, do ſuddenly drie, nor are they viſcous: they are made with meal and powder, with ſom juice, or with ſom humid matter mingled with them. But plaſters of this kinde may rather bee called hard ointments, or cataplaſms: for plaſters properly ſo called are boiled, ſom of them longer, ſom ſhorter, according to the nature of thoſe things Emplaſters.

which make up the compoſition of the Emplaſter: Therefore it will bee worth our labor to know what Emplaſters do ask more, or which leſs boiling. For roots, woods, leavs, ſtalks, flowers, ſeeds, beeing dried, and brought into powder, are to bee added laſt, when the plaſter is boiled as it were, and taken from the fire, leſt the virtue of theſe things bee loſt. But if green things are to bee uſed in a compoſition, they are to bee boiled in ſom liquor, and beeing preſſed forth, that which is ſtrained to bee mingled with the reſt of the compoſition; or if there bee juice to bee uſed, it is to bee bruiſed and preſſed forth, which is ſo to bee boiled with the other things, that nothing for the qualitie is to remain with the mixture, as wee uſe to do in *Empl. de Janua, ſeu Betonica, & Gratia Dei.* The ſame is to bee don with Mucilages, but that by their clammineſs they do more reſiſt the fire. But there doth much of oil and honie remain in their plaſters when they are made. Thoſe juices which are hardened by concretion, as, *Aloës, Hypocyſtis, Acacia,* when they are uſed in the compoſition of a plaſter, and bee yet new, they muſt bee macerated and diſſolved in ſom proper liquor, and then they are to bee boiled to the conſumption of that liquor. Gums, as, *Opopanax, Galbanum, Sagapænum, Ammoniacum,* muſt bee diſſolved in Wine, Vinegar, or *Aqua vitæ,* then ſtrained and boiled to the conſumption of the liquor, and then mixed with the reſt of the plaſter. And that they may have the exact quantitie of Gums and Pitch, it is neceſſarie that firſt they bee diſſolved, ſtrained, and boiled, becauſ of the ſticks and ſordid matter which are mingled with them. You muſt have reſpect alſo to the liquor you uſe to diſſolv them in; for Vinegar of the beſt Wine doth more powerfully penetrate, then that which is of weak and bad Wine.

Other Gums, which are drier, are to bee powdred, and are to bee mingled with plaſters laſt of all. Metals, as, *Æs uſtum, Chalcitis, Magnes, Bolus Armenus, Sulphur, Auripigmentum,* and others, which may bee brought to powder, muſt bee mingled laſt, unleſs adviſe bee given by long boiling to dull the fierce qualities of them. The like conſideration is to bee had of Roſin, Pitch, and Turpentine, which muſt bee put in after the Wax, and may not bee boiled but verie gently; but the fats are mingled whil'ſt the other things are boiling. The Litharge is to bee boiled with the oil to a juſt conſiſtence, if wee would have the plaſter drie without biting. Ceruſs may endure as long boiling, but then the plaſter ſhall not bee white, neither will the Litharge of ſilver make a plaſter with ſo good a color as Litharge of gold. Moreover, this order muſt bee obſerved in boiling up of plaſters: the Litharge muſt bee boiled to his conſiſtence; juices or mucilages are to bee boiled away, then add the fats, then the drie Roſin, Wax, Gums, Turpentine, and after them the powders: You ſhall know the plaſter is boiled enough by his conſiſtence, groſs, hard, glutinous, and ſticking to the fingers, beeing cooled in the air, water, or upon a ſtone. Alſo you ſhall know it by his exact mixtion, if that all the things becom one maſs hard to bee broken.

Signs of a plaſter perfectly boiled.

The quantitie of things to bee put into plaſters.

The quantitie of things which are to bee put into a plaſter can hardly bee deſcribed, but an artificial conjecture may bee given, by conſidering the medicaments, which make the plaſter ſtiff, and of a conſiſtence, and the juſt hardneſs and ſoftneſs they make beeing boiled. Wax is not put into ſuch plaſters wherein is *Labdanum*; for that is in ſtead of Wax. For if there ſhall bee in the compoſition of a plaſter ſom emplaſtick medicaments, the Wax ſhall bee the leſs: Contrariwiſe, if they ſhall bee almoſt all liquid things, the Wax ſhall bee increaſed ſo much, as ſhall bee neceſſarie for the conſiſtence of the plaſter. The quantitie of the Wax alſo muſt bee altered according to the time, or the air; therefore it is fit to leav this to the art and judgment of the Apothecarie. Emplaſters are ſomtimes made of ointments by the addition of wax, or drie roſin, or ſom other hard or ſolid matter. Som would that a handful of medicaments poudred, ſhould bee mingled with one ounce, or an ounce and an half of oil, or ſom ſuch liquor, but for this thing nothing can certainly bee determined: Onely in plaſters deſcribed by the Antients there muſt bee great care had, wherein hee muſt bee verie well verſed, who will not err in the deſcribing the doſe of them; and therefore wee will here give you the more common forms of plaſters.

*Empl. de Vigo* with Mercurie.

℞. *ol. chamæm, aneth. de ſpica, liliacei, an.* ℥ ii. *ol. de croco,* ℥ i. *pingued. porci,* ℔ i. *pingued. vitul.* ℔ ß. *euphorb.* ʒ v. *thuris,* ʒ x. *ol. lauri,* ℥ i ß. *ranas. viv.* nu. vi. *pingued. viper. vel ejus loco human.* ℥ ii ß. *lumbricor. lotor. in vino,* ℥ iii ſ8. *ſucci ebuli, cnul. ana.* ℥ ii. *ſchœnanthi, ſtœchados, matricar. an.* m ii. *vini oderiferi,* ℔ ii. *litharg auri,* ℔ i. *terebinth. claræ,* ℥ ii. *ſtyracis liquid.* ℥ i ſ8. *argenti vivi exſtincti,* ſo much as the preſent occaſion ſhall require, and the ſick ſhall bee able to bear, and make up the plaſter they do commonly add four ounces of quick-ſilver, yet for the moſt part they do increaſ the doſe, as they deſire the plaſter ſhould bee ſtronger: the worms muſt bee waſhed with fair water, and then with a little wine to cleanſ them from their earthie filth, of which they are full, and ſo the frogs are to bee waſh't and macerated in wine, and ſo boiled together to the conſumption of a third part; then the Squinanth muſt bee bruiſed, the Feverfew and the Stæchas cut ſmall, and they beeing added, to bee boiled to the conſumtion of one pint, and beeing boiled ſufficiently, the decoction beeing cooled ſhall bee ſtrained and kept; and the Litharge is to bee infuſed for twelv hours in the oil of Camomil, dill, Lilies, Saffron, and the axungia's above ſpoken of.

Then

Then boil them all with a gentle fire, by and by taking from it from the fire, and add one quart of the decoction above ſpoken of, then ſet it to the fire again that the decoction may bee conſumed, and then by degrees add to the reſt of the decoction: the oil of ſpike ſhall bee reſerved unto the laſt, which may give the plaſter a good ſmell. Then are added the juices of walwurt and enula, which muſt bee boiled until they bee waſted away. Afterwards it beeing taken from the fire, to the compoſition is added the frankincenſ and euphorbium, and white wax as much as ſhall ſuffice. When the whole maſs ſhall cool, then at laſt is mingled the quick-ſilver exſtinct, turpentine, oil of bitter almonds, baies, ſpike, of line, ſtyrax and axungia, beeing continually ſtirred, and it ſhall bee made up upon a ſtone into rolls. Unleſs the quick-ſilver bee well extinguiſhed, it will run all into one place, and unleſs you tarrie until the compoſition cool, it will vapor away in fume.

℞. *croci*, ʒii. *bdelli, maſtich. ammon. ſtyrac. liquid. an* ʒ ß. *ceræ alb.* ℔ ß 8. *tereb.* ʒ vi. *medul. cruris vaccæ, adipis anſerini, an* ʒi. *æſipi, vel ſi deſit, axung. gallin.* ʒix. *olei nard. quantum ſatis ad magdaleones formandos, expreſſionis ſcillæ,* ʒi ß. *olibani, ſevi vitul.* ʒ i. The *æſipus, ſepum, adeps, medulla, cera*, are to bee diſſolved together; when they cool, add the *ammoniacum* diſſolved in the decoction of fenugreek and camomil, half an ounce, and ſo much juice of ſquills, then put to the ſtyrax and turpentine, ſtirring them continually; then add the *bdellium, olibanum*, maſtich, aloës, brought into fine powder, and when they are perfectly incorporated into a maſs let them bee made up with *oleum nardinum* into rolls. *Ceratum æſepi ex Philagrio.*

℞. *terebinth.* ℔ ß. *reſin.* ℔i. *cer alb.* ʒ iv. *maſtich.* ʒi. *fol. verben. betonic. pimpinel. an.* m i. The herbs beeing green, the tops are to bee cut and bruiſed in a ſtone-mortar, and boiled in red wine to the conſumption of one third part. To the ſtrained liquor add wax cut into ſmall pieces, and beeing diſſolved by the fire; the liquor beeing conſumed put to the roſin, when it ſhall cool add the Maſtich powdred, working it with your hands, by which it may bee incorporated with the reſt of the things. *De gratiâ Dei.*

℞. *ſucci beton. plantag. apii, an.* ℔ i. *ceræ, picis, reſin. tereb. an.* ℔ ß. *fiat empl.* The juices are to bee mingled with the wax beeing diſſolved, and boiling them until three parts bee conſumed, add the roſin and pitch, which beeing diſſolved and hot, muſt bee ſtrained, and then add the turpentine, and make up the plaſter. *De janua ſeu de Betonicâ.*

℞. *croci, picis com.* (or rather *picis nivalis*, becauſ this emplaſter is uſed to diſcuſs and draw forth the matter which cauſſeth the pain in the joints) *coloph. ceræ, an.* ʒ ii. *tereb. galb. ammon. thuris, myrrhæ, maſtich. an.* ʒ v ß. The *cera, pix*, and *colophonia* are by little and little to bee diſſolved, to which add the gums diſſolved according to art, and mingled with the terebinth; and taking it from the fire add the *thus, myrrha*, and at laſt the *crocus* in fine powder, and then make it up into rowls with oil of worms, *Emplaſtrum oxycroceum.*

℞. *ol. com.* ℔ ii. *ceruſ. ſubtiliſ.* ℔ i. boil them together with a gentle fire, ſtirring them up continually until they com to the bodie of an emplaſter: if you would have the plaſter whiter, take but ʒ ix. of the oil. *De ceruſâ.*

℞. *lytharg. iriti, acet. fortiſ. an.* ℔ ß. *ol. antiq.* ℔ i. *fiat emplaſtrum*: let the oil bee mingled with the litharge for the ſpace of twelv hours; then boil them to a good conſiſtence, putting in the vineger by little and little; but you ſhall not take it from the fire until the vineger bee quite waſted away. *Triphармacum, ſeu nigrum.*

℞. *ol. vet.* ℔ iii. *axung. vet. ſine ſale,* ℔ ii. *litharg. trit.* ℔ iii. *vitriol.* ʒ iv. let the oil bee mingled with the litharge for the ſpace of twelv hours; and boil them to a good conſiſtence, then add to the axungia, ſtirring them continually with a ſpatter made of the palm-tree, reed, or willow, and beeing ſufficiently boiled, take it from the fire, and add the vitriol in fine powder. *Diapalma, ſeu diachalciteos.*

℞. *picis naval. aloës, an.* ʒ iii. *litharg. ceræ, coloph. galban. ammoniac. an.* ʒ ii. *viſci querni,* ʒ vi. *gypſi uſt. utriuſque ariſtoloch. ana,* ʒ iv. *myrrhæ, thuris, an* ʒ vi. *tereb.* ʒ ii. *pulveris vermium terreſtrium, gallar. utriuſq. conſolid. bol. arm. an.* ʒ iv. *ſang humani,* ℔ i. *fiat emplaſt.* If you would have it of a verie good conſiſtence, you may add of the oil of myrtils or maſtich, ℔ ß. you ſhall make it thus: Take the skin of a Ram cut in pieces, and boil it in an hundred pintes of water and vineger until it com to a glue of ſtiff gellie, in which you ſhall diſſolv the *viſc. quer.* then add the pitch and wax broken into ſmall pieces, and if you will you may add the oil with them, afterwards the *galban.* and *ammoniac.* diſſolved in vineger, beeing mingled with the terebinth, may bee added. Then add the litharge, *gypſum, bol. ariſtoloch. conſolida, vermes & ſang. human.* At laſt the myrrh, *thus, colophon* and *aloë*, ſtirring them continually; and that they may bee the better mingled, work the plaſter with a hot peſtil in a mortar. *Contra ruptu ram.*

℞. *mucag. ſem. lini, rad. alth. fœnug. median. corticis ulmi, an.* ʒiv. *olei liliacei, cham. aneth. an,* ʒiß. *ammon. opopanac. ſagap. ana* ʒß. *croci,* ʒii. *ceræ nov.* ℔ ß. *tereb.* ʒß. *fiat empl. Fernelius* hath ʒxx. of wax: the wax beeing cut ſmall muſt bee mingled with the oils and the mucilages, ſtirring them continually with a wooden ſpatter till the liquor bee conſumed. Then the gums diſſolved and mingled with the terebinthina, muſt bee added, and laſt of all the ſaffron finely powdered. *De mucaginibus*

℞. *ol. roſ. myrtil. ung. populeon, ana,* ʒ iv. *pinguedinis gallin.* ʒii. *ſebi arietis caſtrati, ſepi vaccini, an.* ʒvi. *pingued. porci,* ʒx. *litharg. auri, argenti, an.* ʒ iii. *ceruſ.* ʒ iv. *minii,* ʒ iii. *tereb.* ʒ iv. *ceræ, q. ſ. fiat emplaſtrum vel ceratum molle.* The *litharges, ceruſa*, and *minium* are to bee brought into fine powder, ſeverally beeing ſprinkled with a little roſe water, leſt the fineſt of it ſhould flie away; *De minio.*

theſe

theſe beeing mingled with the oil of roſes and myrtles, with a gentle fire may bee boiled until they com to the conſiſtence of honie; then add the axungia's, and boil them till the whole grow black, after add the *ſebum*, and that beeing diſſolved take it from the fire, and then add the *unguentum populeon*, and ſom wax if there bee need, and ſo bring it to the form of a plaſter.

*Diachylon magnum.* ℞ *litharg.puri pul.* ℥xii. *ol.irin.chamæm.aneth.an* ℥viii. *mucag.ſem.lini, fænug.rad.alth.ficuum ping. uvar.paſſar.ſucci ireos, ſcillæ, æſipi, ichthyocollæ, an.* ℥ vii ß. *tereb.* ℥ iii. *reſ.pini, ceræ flavæ, an.* ℥ ii. *fiat emplaſtrum.* The litharge is to bee mingled with the oil before it bee ſet to the fire, then by a gentle fire it is to bee boiled to a juſt conſiſtence; after the mucilage by degrees muſt bee put in, which beeing conſumed the juices muſt bee added and the ichthyocolla, and they beeing waſted too, then put to the wax, roſin, then taking the whole from the fire, add the œſipus and terebinthina.

The uſe of plaſters. Wee uſe plaſters when wee would have the remedie ſtick longer and firmer to the part, and would not have the ſtrength of the medicament to flie away or exhale too ſuddenly.

## CHAP. XXVIII.

### *Of Cataplaſms and Pultiſſes.*

The matter of cataplaſms. CAtaplaſms are not much unlike to emplaſters leſs properly ſo called, for they may bee ſpread upon linnen cloths and ſtoups like them, and ſo applied to the grieved parts. They are compoſed of roots, leavs, fruits, flowers, ſeeds, herbs, juices, oils, fats, marrows, meals, roſins. Of theſe ſom muſt bee boiled, others crude. The boiled are made of herbs boiled tender, and ſo drawn forth an hair-ſearſ, adding oils and axungia's thereto. The crude are made of herbs beaten, or their juices mixed with oil and flower, or other powders appropiate to the part or diſeaſ, as the Phyſician ſhall think fit. The quantitie of medicines entring theſe compoſitions can ſcarce bee defined, for that they muſt bee varied as wee would have the compoſition of a ſofter or harder bodie. Verily they ought to bee more groſs and denſ when as wee deſire to ripen anie thing, but more ſoft and liquid when wee endevour to diſcuſs. Wee uſe cataplaſms to aſſwage pain, digeſt, diſcuſs and reſolv unnatural tumors and flatulencies. They ought to bee moderately hot and of ſubtil parts, ſo to attract and draw forth; yet their uſe is ſuſpected the bodie beeing not yet purged, for thus they draw down more matter into the affected part. Neither muſt wee uſe theſe when as the matter that is to bee diſcuſſed is more groſs and earthie, for thus the ſubtler parts will bee onely diſcuſſed, and the groſs remain impact in the part unleſs your cataplaſm bee made of an equal mixture of things, not only diſcuſſing, but alſo emollient, as it is largely handled by *Galen*.

Their uſe.

*Lib.2. ad glauc. ubi de ſcirrho.*

This ſhall bee largely illuſtrated by examples. As, ℞ *medul. panis,* ℔ ß. *decoquantur in lacte pingui, adde olei chamæm.* ℥ ß. *axung. galin* ℥i. *fiat cataplaſma.* Or, ℞ *rad. alth.* ℥ iii. *fol.malv.ſenecionis, an.* m i. *ſem. lini, fænug. au.* ℥ ii. *ficus, ping.* nu. vi. *dequoquantar in aquâ, & per ſetaceum tranſmittantur, addendo olei lilior.* ℥ i. *far. hord.* ℥ ii *axung. porcin.* ℥ i ß. *fiat cataplaſma.* Or, ℞ *far. fab. & orob. an.* ℥ ii. *pulv. chamæm. & melil. an.* ℥ iii. *ol.irin. & amygd.amar. an.* ℥i. *ſucci rut.* ℥ ß. *fiat cataplaſma.* Pultiſſes differ not from cataplaſms, but that they uſually conſiſt of meals boiled in oil, water, honie, or axungia. Pultiſſes for the ripening of tumors are made of the flour of barlie, wheat, and milk, eſpecially in the affects of the entrals; or elſ to drie and binde, of the meal of rice, lentils, or *Orobus* with vineger; or to cleanſ, and they are made of honie, the flour of beans and lupines, adding thereto ſom old oil, or anie other oil of hot qualitie, and ſo make a diſcuſſing pultis. Alſo anodyne pultiſſes may bee made with milk; as thus for example, ℞ *farin.triticeæ,* ℥ii. *micæ panis puriſſimi,* ℥ iii. *decoquantur in lacte, & fiat pulticula.* ℞ *farin. hordei & fab. an.* ℥ ii. *far. orob.* ℥ iii. *decoquantur in hydromelete, addendo mellis* quart. i. *olei amyg. amar.* ℥ ii. *fiat pulticula.* Wee uſe pultiſſes for the ſame purpoſe as wee do cataplaſms, to the affects both of the internal and external parts. Wee ſomtimes uſe them for the killing of worms, and ſuch as are made of the meal of Lupines boiled in vineger, with an ox's gall, or in a decoction of wormwood, and other ſuch like bitter things.

An anodyne cataplaſm. A ripening cataplaſm. A diſcuſſing cataplaſm. How Pultiſſes differ from cataplaſms.

A ripening cataplaſm.

## CHAP. XXIX.

### *Of Fomentations.*

A *Fotus* or fomentation is an evaporation or hot lotion, chiefly uſed to mollifie, relax and aſſwage pain, conſiſting of medicines having theſe faculties. A fomentation commonly uſeth to bee moiſt, beeing uſually made of the ſame things as embrocations, to wit, of roots, ſeeds, flowers, boiled in water or wine. The roots here uſed are commonly of mallows, marſh-mallows, and lilies. The ſeeds are of mallows, marſh-mallows, parſlie, ſmallage, line, fenugreek. Flowers are of camomil, melilot, figs, raiſins, and the like: all which are to bee boiled in wine, water, or lee, the conſumption of the third part or the half: as,

℞ *Rad.alth. & lil. an.* ℥ii. *ſem.lini, fænug.cumin.an.* ℥iii. *flo. cham. melil. & aneth.an.* p.i. *ſummit. orig.* m.ß. *bulliant in æquis partibus, aquæ & vini, aut in duabus partibus aquæ, & unâ vini, aut in*

*Lixivio*

*Lixivio cineris sarmentorum, ad tertiæ partis consumptionem, fiat fotus.* In imitation hereof you may easily describe other fomentations, as occasion and necessitie shall require.

Wee use fomentations before wee applie cataplasms, ointments or plasters to the part, that so wee may open the breathing places or pores of the skin, relax the parts, attenuate the humor, that thus the waie may bee the more open to the following medicines. The bodie beeing first purged, fomentations may bee used to what parts you pleas. They may bee applied with a female-spunge, for it is gentler and softer then the male; with felt, woollen cloaths, or the like dipped in the warm decoction wrung out, and often renued; otherwise, you may fill a Swine's bladder half full (especially in pains of the sides) of the decoction, or else a stone-bottle, so to keep hot the longer; yet so, that the bottle bee wrapped in cotton, wool, or the like soft thing, that so it may not by the hardness and roughness offend the part, according to *Hippocrates*. Their use. 2. *De victu in acutis.*

## CHAP. XXX.

### *Of Embrocations.*

AN *Embroche*, or Embrocation is a watering, when as from on high wee (as it were) showr down som moisture upon anie part. This kinde of remedie is chiefly used in the parts of the head, and it is used to the coronal suture, for that the skull is more thin in that part, so that by the *spiracula* or breathing places of this suture, more open then those of the other sutures, the force of the medicine may more easily penetrate unto the *Meninges*, or membranes of the brain. The matter of Embrocations is roots, leavs, flowers, seeds, fruits, and other things, according to the intention and will of the Physician. They are boiled in water and wine, to the half or third part. Embrocations may also bee made of Lie or Brine against the cold and humid affects of the brain. Somtimes of oil and vineger, otherwhiles of oil onely. ℞. *fol plantag. & solan. an* m.i. *sem portul & cucurb. an* ʒii. *myrtil.* ʒi. *flor. nymph. & ros. an* p.ß. *fiat decoct. ad* ℔i. *cum aceti* ʒii. *si altè subeundum sit, ex quâ irrigetur pars inflammata.* What an Embrocation is.

In affects of the brain, when wee would repercuss, wee often and with good success use oil of Roses with a fourth part of vineger.

Wee use Embrocations, that together with the air drawn into the bodie by the *Diastole* of the arteries, the subtler part of the humor may penetrate, and so cool the inflamed part: for the chief use of embrocations is in hot affects. Also wee use embrocations, when as for fear of an hæmorrhagie, or the flying asunder of a broken or dislocated member, wee dare not loos the bandages wherewith the member is bound. For then wee drop down som decoction or oil from high upon the bandages, that by these the force of the medicine may enter into the affected member. Their use.

## CHAP. XXXI.

### *Of Epithemes.*

EPithema, or an Epitheme, is a composition used in the diseases of the parts of the lower and middle bellie, like to a fomentation, and not much unlike an embrocation. They are made of waters, juices, and powders, by means whereof they are ruled to the heart, chest, liver and other parts. Wine is added to them for the more or less penetration, as the condition of the hot or cold affect shall seem to require; for if you desire to heat, more wine must bee added, as in swooning by the clotting of blood, by the corruption of the seed, by drinking som cold poison: the contrarie is to bee don in a fainting by dissipation of the spirits by feverish heats, also vineger may bee added. The matter of medicines proper to the entrails is formerly described, yet wee commonly use the *species* of electuaries, as the *species electi. triasantali* the liver beeing affected, and Diamargariton in affects of the heart. The proportion of the juices or liquors to the powders, use's to bee this, to everie pinte of them ʒi. or ʒiß. of these, of wine or elf of vineger ʒi. You may gather this by the following example. What an Epitheme is. In the sixth Chapter.

℞. *aqu. ros. bugl. borag. an.* ʒiii. *succi scabios.* ʒii. *pul. electr. diamarg. frigid* ʒii. *cort. citri sicci* ʒi. *coral. raf. ebor. an.* ʒß. *sem citri & card. ben. an.* ʒiiß. *croci & moschi an. gra.* 5. *addendo vini albi* ʒii. *fiat Epithema pro corde.* A cordial Epitheme.

Epithemes are profitably applied in hectick and burning fevers to the liver, heart, and chest, if so bee that they bee rather applied to the region of the lungs; then of the heart; for the heat of the lungs beeing by this means tempered, the drawn in air becom's less hot in pestilent and drying fevers. They are prepared of humecting, refrigerateing, and cordiall things, so to temper the heat, and recreate the vital facultie. Somtimes also wee use Epithemes to strengthen the heart, and drive there-hence venenate exhalations, lifted or raised up from anie part which is gangrenate or sphacelate. Som cotton, or the like, steeped or moistened with such liquors and powders warmed, is now and then to bee applied to the affected entrail; this kinde of remedie, as also all other topick and particular medicines, ought not to bee used, unless you have first premised general things. Their use.

CHAP.

## CHAP. XXXII.

### *Of Potential Cauteries.*

The uſe of potential cauteries.

THat kinde of Pyrotick, which is termed a Potential Cauterie, burn's, and cauſſeth an eſchar. The uſe of theſe kindes of Cauteries is to make evacuation, derivation, revulſion, or attraction of the humors by thoſe parts whereto they are applied. Wherefore they are often and with good ſucceſs uſed in the punctures and bites of venemous beaſts, in a venemous, as alſo in a peſtilent *Bubo* and Carbuncle, unleſs the inflammation bee great: for the fire doth not onely open the part, but alſo retund's the force of the poiſon, call's forth, and plentifully evacuate's the conjunct matter. Alſo they are good in phlegmatick and contumacious tumors; for by their heat they take away the force and endevours of our weak heat. Alſo they are profitably applied to ſtanch bleeding, to eat or waſte the ſuperfluous fleſh of ulcers and wens, to bring down the callous lips of ulcers, and other things too long here to inſiſt upon.

The matter of them.

The materials of theſe Cauteries are Oke-aſhes, Pot-aſhes, the aſhes of Tartar, of Tithymals or ſpurges, the Fig-tree, the ſtalks of Colewurts and beans, cuttings of Vines, as alſo *ſal ammoniacum, alkali, axungia vitri, ſal nitrum*, Roman Vitriol, and the like; for of theſe things there is made a ſalt, which by it's heat is cauſtick and eſcharotick, like to an hot iron and burning coal: Therefore it violently looſe's the continuitie by eating into the skin, together with the fleſh there-under. I have thought good here to give you divers forms of them.

The forms of them.

Take of unquench't Lime exſtinguiſhed in a bowl of Barber's Lee three pounds: When the Lee is ſettled, let it bee ſtrained, and into the ſtraining put of *Axungia vitri*, or Sandiver, calcined Argol, of each two pounds, of *Sal nitrum & ammoniacum*, of each four ounces, theſe things muſt bee beaten into a groſs powder, then muſt they bee boiled over the fire, and after the boiling let them remain in the Lee for four and twentie hours ſpace, beeing often ſtirred about, and then ſtrained through a thick and double linnen-cloth, leſt anie of the earthlie droſs get thorow together with the liquor. This ſtrained liquor, which is as clear as water, they call *Capitellum*, and they put it in a braſen Baſin, ſuch as Barbers uſe, and ſo ſet it upon the fire, and aſſoon as it boil's, they keep it with continual ſtirring, leſt the ſalt ſhould adhere to the baſin; the *Capitellum* beeing half boiled away, they put in two ounces of powdred vitriol, ſo to haſten the falling of the eſchar, and ſo they keep the baſin over the fire until all the liquor bee almoſt waſted away. Then they cut into pieces the ſalt or that earthie matter, which remain's after the boiling away of the *Capellum*, and with a knife or hot iron ſpatula, form them into cauteries of ſuch figure and magnitude as they think fitting, and ſo they laie them up, or keep them for uſe in a viol or glaſs cloſely ſtopped, that the air get not in: Or,

Take a bundle or ſufficient quantitie of Bean-ſtalks or husks, of Colewurt-ſtalks two little bundles, of cuttings of Vines four handfuls, burn them all to aſhes, which put into a veſſel of river-water, ſo let them infuſe for a daie's ſpace, beeing ſtirred ever now and then; to this adde two pounds of unquench't Lime, of *Axungia vitri* half a pound, of calcined Tartar two pounds, of *Salniter* four ounces, infuſe all theſe, beeing made into powder, in the foreſaid Lee for two or three daies ſpace, often ſtirring it, then ſtrain the *Capitellum* or liquor through a thick cloth until it becom clear. Put it into a baſon, and ſet it over the fire, and when as the moiſture is almoſt wholly ſpent, let two or three ounces of vitriol bee added, when the moiſture is ſufficiently evaporated, make cauteries of that which remain's, after the formerly mentioned manner.

Take of the aſhes of ſound, knottie, old Oke as much as you pleaſ, make thereof a Lee; powr this Lee again upon other freſh aſhes of the ſame wood, let this bee don three or four times, then quench ſom Lime in this Lee, and of theſe two make a *Capitellum*, whereof you may make moſt approoved cauteries. For ſuch aſhes are hot in the fourth degree; and in like ſort the ſtones, whereof the lime by burning becom's fierie and hot to the fourth degree: Verily, I have made cauteries of Oke-aſhes onely, which have wrought quickly and powerfully. The *Capitellum* or Lee is thought ſufficiently ſtrong, if that an egg will ſwim therein without ſinking. Or,

The ſign of good *Capitellum*.

Take of the aſhes of bean-ſtalks three pounds, of unquench't lime, Argol, of the aſhes of Oke-wood, beeing all well burnt, of each two pounds. Let them for two daies ſpace bee infuſed into a veſſel full of Lee made of the aſhes of Oke-wood, and bee often ſtirred up and down. Let this Lee then bee put into another veſſel, having manie holes in the bottom thereof, covered with ſtrums or ſtraw-pipes, that the *Capitellum* flowing through theſe ſtrait paſſages may becom more clear. Let it bee put twice or thrice upon the aſhes, that ſo it may the better extract the heat and cauſtick qualitie of the aſhes. Then putting it into a Barber's baſin, ſet it over the fire, and when it ſhall begin to grow thick, the fire muſt bee increaſed, and cauteries made of this concreting matter.

The faculties of the filken cauterie.

The following cauteries are the beſt that ever I made trial of, as thoſe that applied to the arm in the bigneſs of a Peaſ, in the ſpace of half an hour without pain, eſpecially if the part of it ſelf bee painleſs and free from inflammation, eat into the skin and fleſh even to the bone,

bone, and make an ulcer of the bigneſs of ones finger's end, and they leav an eſchar ſo moiſt and humid, that within four or five daies ſpace it will fall away of it ſelf without anie ſcarification. I have thought good to call theſe cauteries Silken or Velvet ones, not onely for that they are like Silk, gentle and without pain, but chiefly becauſ I obteined the deſcription of them of a certain Chymiſt, who kept it as a great ſecret, for ſom Velvet and much entreatie: Their deſcription is this, The cauſ of the name.

Take of the aſhes of Bean-ſtalks, of the aſhes of Oke-wood well burnt, of each three pounds, let them bee infuſed in a prettie quantitie of river-water, and bee often ſtirred up and down, then add thereto of unquencht lime four pounds, which beeing quencht, ſtir it now and then together for two daie's ſpace, that the *Capitellum* may becom the ſtronger, then ſtrain it through a thick and ſtrong linnen-cloth, and thus ſtrained, put it three or four times upon the aſhes, that ſo it may draw more of the cauſtick faculties from them, then boil it in a Barber's baſin, or elſ an earthen one well leaded, upon a good Char-coal-fire, until it becom thick. But a great part of the ſecret or art conſiſt's in the manner and limit of this boiling; for this *Capitellum* becomming thick and concreating into ſalt, muſt not bee kept ſo long upon the fire, until all the moiſture ſhall bee vaniſhed and ſpent by the heat thereof: for thus alſo the force of the foreſaid medicines, which alſo conſiſt's in a ſpirituous ſubſtance, will bee much diſſipated and weakned; therefore before it bee com to extreme drineſs, it ſhall bee taken off from the fire, to wit, when as yet there ſhall ſom thick moiſture remain, which may not hinder the cauteries from beeing made up into a form. The made-up cauteries ſhall bee put up into a glaſs moſt cloſely luted up or ſtopped, that the air may not diſſolv them, and ſo they ſhall bee laid up and kept in a drie place. Now, becauſ the powder of Mercurie is neer to cauteries in the effects and facultie thereof, which therefore is termed *Pulvis Angelicus* for the excellencie; therefore I have thought good to give you the deſcription thereof, which is thus: Their deſcription.

℞. *Auripigmenti citrini, floris æris, an.* ℥ii. *ſalis nitri,* ℔ß. *alumin. rochæ,* ℔ii. *vitrioli rom.* ℔iii. Let them all bee powdred, and put into a Retort, having a large receiver well luted put thereto. Then ſet the Retort over a Fornace, and let the diſtillation bee made firſt with a gentle fire, then increaſed by little and little, ſo that the receiver may wax a little reddiſh. The deſcription of Mercurie or Angelical powder.

℞. *Argenti vivi,* ℔ß. *aquæ fortis,* ℔i. *ponantur in phiala, & fiat pulvis, ut ſequitur.*

Take a large earthen pot, whereinto put the viol or bolt-head wherein the *Argentum vivum* and *Aqua fortis* are conteined, ſetting it in aſhes up to the neck thereof, then ſet the pot over a fornace, or upon hot coals, ſo that it may boil and evaporate away the *Aqua fortis*: neither in the *interim* will the glaſs bee in anie danger of breaking, when all the water is vaniſhed away, which you may know is don when as it leav's ſmoaking; ſuffer it to becom cold, then take it forth of the aſhes, and you ſhall finde calcined Mercurie in the bottom, of the color of red Lead, ſeparated from the white, yellow or black excrement; for the white that concrete's in the top is called Sublimate, which if it ſhould remain with the calcined Mercurie, you ſhall make it into powder, and put it in a braſs-veſſel upon ſom coals, ſtirring or turning it with a *ſpatula* for the ſpace of an hour or two: for thus it will loſe a great part of the acrimonie and biting, whence it will becom leſs painful in the operation.

## CHAP. XXXIII.

### *Of Veſicatories.*

VEſicatorie and rubrifying ointments, cataplaſms, or plaſters are made of acrid medicines, which have power to draw forth to the ſuperficies of the bodie ſuch humors as lie deep, by exulcerating the skin and cauſling bliſters. Their matter is the ſame with ſeptick medicines; as, *Sinapi, anacardus, cantharides, euphorb. radices ſcyllæ, bryon.* and the like, which with honie, turpentine, leaven, gum, or roſin, may bee made into cataplaſms, ointments, or plaſters; therefore the compoſure of veſicatories, or rather their conſiſtence differ's not from that of hard or ſoft unguents. Therefore I will give you one example or deſcription of them, which is thus. What veſicatorie and rubrifying medicines are.

℞. *cantharid. euphorbii, ſinapi, an.* ℥ß. *mellis anacardini,* ℥i. *modico aceti, & fermenti quod ſit ſatis excipiantur, & fiat veſicatorium.* Som of the antients think it better to make up theſe medicines with water rather then with vineger, becauſ experience teacheth that vineger abate's the ſtrength of muſtard. Wee uſe this kinde of medicine in long diſeaſes, when as wee cannot anie thing prevail with other remedies; eſpecially in the head-ach, megrim, epilepſie, *ſciatica*, gout, the bites and punctures of venemous creatures, peſtilent carbuncles, and other inveterate and contumacious diſeaſes. The deſcription of a veſicatorie. Their uſe.

Alſo wee uſe them when as wee would reſtore life and ſtrength to a dead or decaied part, for thus they are drawn back together with the heat; for which purpoſe wee muſt make choiſ of more gentle veſicatories, as ſuch which onely rubrifie, ſo that the part may onely becom red, and not bee burnt: the part muſt firſt bee ſtrongly rubbed, that the decaied and dull heat may bee rowzed and ſtirred up, the pores of the skin more opened, that the force of the medicine may enter the deeper into the bodie.

CHAP.

## CHAP. XXXIV.

### *Of* Collyria.

What a *collyrium* is.

A *Collyrium* is a medicine proper for the eies, made of powder finely levigated and groun'd into the form of *Alchohol*, as the Arabians and our Alchymiſts term it: yet the word in a more general acception is uſed for anie liquid medicine, made with liquors and powders, and applied or uſed to anie part. Wherefore *collyria* are of three kindes, ſom are moiſt or liquid, which are properly called *collyria*; others drie, which are of the ſame conſiſtence with Trochiſces; others have the conſiſtence of honie, or a liniment. The liquid ſerv for the greater and leſſer corners of the eies; thoſe of the conſiſtence of honie are meet for the apple of the eie; but the drie are to bee made into powder, and ſo blown into the eies: alſo ſomtimes they are to bee diſſolved in ſom juice, or other convenient liquor, that ſo they may bee made into a moiſt *collyria*.

The differences of them.

Their uſe.

Therefore *collyria* have diverſ uſes, and are applied to ſeveral parts according to the intention and counſel of the Phyſician: for liquid *collyria* put into the corners of the eies do more readily mitigate the heat of their inflammation, by reaſon they enter more eaſily by the tenuitie of their ſubſtance, ſuch things as have a more firm conſiſtence adhere more tenaciouſly, and work more certainly. Moiſt *collyria* are made of juices, mucilages, waters of herbs, flowers, ſeeds, metalline bodies, galls, and other ſuch like medicines, which are repercuſſives, reſolvers, detergents, anodynes, and the like, according to the nature of the preſent diſeaſ.

Their matter.

Somtimes they are made of juices and diſtilled waters onely, otherwhiles powders, or drie *collyria* made into powder, are mixed with them, together with the white of an egg. Powders are preſcribed to ʒii. and liquors to ʒiv. or ʒv. in medicines for the eies; but for other parts, as when it is to bee injected into the urinarie paſſage, they may bee preſcribed to the quantitie of a pinte. Drie *collyria* are made of powders exceeding finely beaten or groun'd, and incorporated with ſom juice, whence it is that they differ little from Trochiſces. Wherefore the *collyrium album Rhaſis* is now uſually termed a Trochiſce, and kept with them. Catheretick powders are not applied in the form of a moiſt *collyrium*, but in the form of a liniment, that is, incorporated with fat or oil. All theſe things ſhall bee made more plainly by the following examples.

A repercuſſive *collyrium*. An anodyne. A detergent.

℞. *aq. plant. & roſar. an.* ʒii. *album. ovi unum, bene agitatum, miſce, fiat collyrium.* ℞. *aq. roſar. & viol. an.* ʒiii. *trochiſ. alb. Rhaſ. cum opio,* ʒii. *fiat collyrium.* Or, ℞. *decoct. fœnug.* ʒiii. *mucag. ſem. lini,* ʒii. *ſaccar. cand.* ʒi. *croci,* ℈i. *fiat collyr.* ℞. *thuris, myrrh.* ℈ii. *tut. prepar. & antimon. lot. an.* ʒii. *cum ſucco chelidon. fiat collyrium in umbrâ ſiccand.* ℞. *fellis perdic. ant lepor.* ʒß. *ſucci fœnicul.* ʒi. *ſaccar. cand.* ʒii. *ſyrup. roſ. excipiantur, fiat collyrium.*

Wee uſe *collyria* in wounds, ulcers, fiſtula's, ſuffuſions, inflammations, and other diſeaſes of the eies.

## CHAP. XXXV.

### *Of Errhines and Sternutatories.*

What an errhine is.

Their differences.

Errhines are medicines appointed to bee put into the noſe to purge the brain of it's excrementitious humors by the noſtrils, or to deterge ſuch excrements as are therein, by reaſon of an *ozæna*, *polypus*, or the like diſeaſ. Errhines are either liquid or drie, or elſ hard, and of the conſiſtence of an emplaſter. Liquid errhines, which uſually are to purge the head, are made of the juices of herbs; as beets, colewurts, marjoram, pimpernel, hyſſop or balm, or of their decoctions taken alone, or mixed with wine, or ſyrup, as *oxymel ſcilliticum*, ſyrup of hyſſop, roſes, or *mel anthoſatum*: ſomtimes powders are mixed with theſe liquors; as of pepper, *euphorbium*, pellitorie of Spain, hore-hound, *nigella romana*, *caſtoreum*, myrrh, white ellebore, ſow-bread, and other like, in a ſmall quantitie, to wit, to ʒi. little more or leſs according to the vehemencie of the diſeaſ. Wee will make this more plain by examples.

The form of one.

℞. *ſucci betæ, majoran, braſſic. an.* ʒi. *depurentur, & modicè bulliant cum vini albi,* ʒii. *oxymelit. ſcillit.* ʒß. *fiat errhinum.* When as you deſire to attract more powerfully from the brain, you may diſſolv in errhines ſom purging medicines; as agarick, *diaphœnicon*, *ſenna*, *carthamus*, and the like: hence doth ariſe the diſtinction of errhines into ſuch as are meet to purge phlegm, choler, and melancholie. This following example is ſet down by *Rondeletius*.

An errhine purging phlegm.

℞. *rad. pyreth. irid. an.* ʒi. *puleg. calam. origon. an.* m i. *agar. trochiſc.* ʒiii. *flor. anthos & ſtœchad. an.* p i. *fiat decoctio in colatur.* ℔i. *diſſolve mellis anthoſati & ſcillit. an.* ʒiii. *fiat caput purgium.* But it is better to this purpoſe to make uſe of purging ſimples; as agarick, turbeth, coloquintida, and the like, then of compoſitions; as *diaphœnicon*, for theſe make the decoction more thick, and leſs fit to enter the paſſages of the noſtrils, and the ſiev-like bones, but apt rather there to cauſ obſtruction, and intercept the freedom of reſpiration.

An errhine with powders.

℞. *ſucci betæ,* ʒi. *aq. ſalv. & beton. an.* ʒiiß. *pul. caſtor.* ℈ß. *piper. & pyreth. an.* ℈i. *fiat caput purgium.* Drie errhines that are termed ſternutatories, for that they cauſ ſneeſing, are made of powders onely, to which purpoſe the laſt mentioned things are uſed; as alſo aromatick

things

things in a small quantitie, as to ʒii. at the most: as, ℞. *major. nigel, caryoph. zinzib, an.* ℈i. *acor. pyreth. & panis porcin. an.* ℈ß. *euphorb.* ℈i. *terantur, & in nares mittantur, aut insufflentur.* Errhines of the consistence of Emplasters, by the Latins vulgarly called *Nasalia*, are made of the described powders or gums dissolved in the juice of som of the forementioned herbs, incorporated with turpentine and wax, that so they may the better bee made into a pyramidal form to bee put into the nostrils. As, ℞. *majoran. salv. nigel.* ℈ii. *pip. alb. caryoph. galang. an.* ℈i. *pyreth. euphorb. an.* ʒß. *panis porcin. ellebor. alb. an.* ℈i. *terantur, & in pulverem redigantur.* And then with turpentine and wax as much as shall bee sufficient, make them up into *Nasalia* of a pyramidal or taper-fashion. Wee use errhines in inveterate diseases of the brain; as the epilepsie, fear of blindeness, an apoplexie, lethargie, convulsion, the lost sens of smelling: yet wee first use general remedies and evacuations, lest by sneesing and the like concussion of the brain for the exclusion of that which is offensive thereto, there should bee made a greater attraction of impuritie from the subjacent parts. Liquid things must bee drawn up into the nostrils warm out of the palm of the hand, to the quantitie of ʒß. the mouth beeing in the interim filled with water, lest the attracted liquor should fall upon the palat, and so upon the lungs: drie errhines are to bee blown into the nose with a pipe or quill: solid ones must bee fastned to a thred, that they may bee drawn forth as need require's, when as they are put up into the nostrils. The morning (the bellie beeing emptie) is the fittest times for the use of errhines. If by their force the nose shall bee troubled with an itching, the pain thereof must bee mitigated by woman's milk, or oil of violets. The use of attractive errhines is hurtful to such as are troubled with diseases of the eies, or ulcers in the nose, as it oft-times fall's out in the *Lues venerea:* wherefore in this case it will bee best to use Apophlegmatisms, which may divert the matter from the nose.

Asternutatorie.

The matter of solid errhines.

Their use.

The manner of using them.

To whom they are hurtful.

## CHAP. XXXVI.

### *Of Apophlegmatisms, or Masticatories.*

*Apophlegmatismoi* in Greek, and *Masticatoria* in Latine, are medicines which kept or held in the mouth and somwhat chawed, do draw by the mouth forth of the brain excrementitious humors, especially phlegm: now they are chiefly made four manner of waies; the first is when as the medicines are received in honie or wax, and formed into pills, and so given to chaw upon. The second is, when as the same things are bound up in a fine linnen-cloth, so to bee held in the mouth. The third is when as a decoction of acrid medicines is kept in the mouth for a prettie space. The fourth is when as som acrid medicine, or otherwise drawing phlegm, as pellitorie of Spain, mastich, and the like, is taken of it self to the quantitie of a hasel-nut, and so chawed in the mouth for som space. The matter of masticatories is of the kinde of acrid medicines; as of pepper, mustard, hyssop, ginger, pellitorie of Spain, and the like; amongst which you must make choice chiefly of such as are not troublesom by anie ingrate taste, that so they may bee the longer kept in the mouth with the less offence and loathing. Yet masticatories are somtimes made of harsh or acerb medicines; as of berberies, the stones of prunes or cherries, which held for som space in the mouth, draw no less store of phlegm then acrid things; for the verie motion and rowling them up and down the mouth attract's, becaus it heat's, compresse's, and expresse's: the quantitie of the medicine ought to bee from ʒß. to ʒiß: as, ℞. *pyreth. staphisag. an.* ʒiß. *mastich.* ʒß. *pulverentur & involventur nodulis in masticatoria.* Or, ℞. *zinzib. sinap. an.* ʒi. *euphorb.* ℈ii. *piper.* ʒß. *excipiantur melle, et fiant pastilli pro masticatoriis.* ℞. *hyssop. thym. origan. salv. an.* p i. boil them in water to wash the mouth withall. Or, ℞. *zinzib. caryoph. an* ʒi. *pyreth. pip. an* ʒß. *staphisagr.* ʒii. *mastiches*, ʒß. *excipiantur, fiant pastilli pro masticatoriis.* Wee use masticatories in old diseases of the brain, dimness of the sight, deafness, pustles of the head and face, and somtimes to divert the excrements which run to the nose beeing ulcerated.

What an apophlegmatism is.

The differences.

The use of masticatories.

Masticatories are verie hurtful to such as have their mouths or throats ulcerated, as also to them whose longs are subject to inflammations, distillations and ulcers; for then errhines are more profitable to derive the matter of the disease by the nostrils. For though the humor drawn from the brain into the mouth by the means of the masticatorie, may bee thence cast forth by coughing and spitting, yet in the interim nature will bee so inured to that passage for the humor, so that it will run that waie when as wee sleep, and fall down upon the parts thereunder, weak either by nature, or by accident.

To whom hurtful.

The time fittest for the use of Apophlegmatisms is the morning, the bodie beeing first purged; if anie ingrateful taste remain in the mouth, or adhere to the tongue by using of masticatories, you shall take it away by washing the mouth with warm water, or a decoction of liquorice and barlie.

## CHAP. XXXVII.

### *Of Gargarisms.*

A Gargle or gargarism is a liquid composition fit for to wash the mouth and all the parts thereof, to hinder defluction and inflammation, to heal the ulcers which are in those parts, to asswage pain. Their composition is two-fold, the first is of a decoction of roots, leavs, flowers,

What a gargle is.

The differences thereof.

flowers, fruits, and ſeeds fit for the diſeaſ; now the decoction is to bee made either in fair water alone, or with the admixture of white or red wine, or in the decoction of liquorice and barlic, or of pectoral things, as the intention of the Phyſician is to repel, cool, or hinder inflammation; as in the tooth-ach cauſſed by matter which is yet in motion; to diſcuſs, as in the tooth-ach already at the height; or to cleanſ, as in the ulcers of the mouth; or to drie and binde, as when it is fit to heal the ulcers already cleanſed.

Their matter. The other waie of making of gargariſms is without decoction, which is, when as wee make them either of diſtilled waters onely, or by mixing them with ſyrups, mucilages, milk, the whey of Goat's-milk carefully ſtrained. There are mixed ſomtimes, with a decoction, diſtilled waters and mucilages, *mel roſatum, oxymel ſimplex, diamoron, dianucum, hiera, picra, oxyſacchara, ſyrup. de roſis ſiccis, ſyrupus acetoſus*, and other things, as the preſent caſe ſhall ſeem to require; as alum, *balauſtia*, myrrh, *olibanum*, ginger, pepper, cinnamom, drie roſes, and manie ſuch things; even ſo that oft-times there enter into gargles ſuch medicines as have force to draw from the brain; as pellitorie of Spain, carthamus, turbith, and ſuch things as have no bitterneſs, which is the cauſe that neither agarick nor coloquintida ought to enter into gargariſms.

The quantitie of liquor for a gargariſm is commonly from ℔ ß. to ℔i. mix therewith ſom ʒii. of ſyrups, but put in powders ſparingly; as ſom ʒiii. Alum may ſomtimes bee put in to ʒvi. let mucilages bee extracted out of ʒii. of ſeeds: let theſe ſerv for ſom examples.

An aſtringent gargle. An anodyne gargle. ℞. *plant. polygon. oxalidis, an.* m i. *roſar. rub.* p ß. *hordei*, pi. *fiat decoctio ad* ʒviii. *in quâ diſſolve ſyrupi myrtillorum*, ʒvi. *dianucum*, ʒß. *fiat gargariſma*, Or, ℞. *cham. melil aneth. an.* p i. *roſ. rub.* p ß. *paſſul. mund. & ficuum, an.* p iii. *decoquantur in æquis partibus vini & aquæ, ad* ʒvi. *addendo mucag. ſem. lini, & fœnugr. an.* ʒii. *fiat gargariſma.*

Or elſ, ℞. *aq. plantag. liguſt. abſinth. an* ʒii. *mellis roſati colati*, ʒvi. *ſyrup. roſar. ſiccar. & de abſinth. an.* ʒvi. *fiat gargariſma.*

A deterſive. Wee uſe gargles in the morning faſting after general purgations; they are ſomtimes taken or uſed cold, when as malign, acrid, and thin humor fall's down, ſomtimes warm, but let theſe things bee don according as the Phyſician ſhall adviſe.

## CHAP. XXXVIII.

### *Of Dentifrices.*

What a dentifrice is. The differences. The matter whereof they conſiſt. DEntifrices are medicines prepared and ſerving divers waies for to cleanſ, whiten, and faſten the teeth; for from their uſe they take their name. Of theſe, ſom are drie, other ſom moiſt: of the drie, ſom have the form of opiats, others of powders groſly beaten, but the moiſt are commonly made by diſtillation: the matter of drie dentifrices is taken from detergent and drying things; ſuch as are coral white and red, hart's-horn, ſcuttle-bones, alum, cryſtal, pumice, ſal-nitre, myrrh, frankincenſ, *balauſtia*, acorns, all ſorts of ſhells of fiſhes: all theſe are to bee made into powder either by burning, or without it, for ſcuttle-bones burn't caſt forth a ſtinking and unpleaſant ſmell. To theſe for ſmell ſake are added certain aromatick things; as cinnamom, cloves, nutmegs, and the like: ſuch powders if mixed with ſom ſyrup; as *oxymel ſcilliticum*, or with mucilage of gum arabick and tragacanth, will becom opiats, to bee made into a pyramidal form of ſom finger's length, round or ſquare, and ſharp pointed, that dried they may ſerv for dentifrices.

Somtimes emollient roots are boiled with ſalt or alum, that dried again they may bee uſed for dentifrices: moiſt ones are made of drying herbs, diſtilled together with drying and aſtringent things.

A powder for a Dentifrice. All the differences ſhall appear by the following examples. ℞. *lapidis ſpong. pumicis, & cornu cervi uſt. an.* ʒii. *coral. rub. & cryſtal. an.* ʒi. *alum. & ſal. uſt. an.* ʒiß. *cinnamom. & caryoph. roſar. rub. pulver. an.* ℈ii. *fiat pulvis pro dentrificio.* Or, ℞. *oſſis ſepiæ*, ʒß. *maſtiches, coralli rubri uſti, an.* ʒii. *cornu cervi uſti*, ʒiß. *aluminis, carbonis, roriſmarini, an.* ʒi. *cinnamomi*, ʒii. *fiat pulvis pro dentifricio.* Or, ℞. *oſſis ſepiæ, alum. & ſalis uſti, an.* ui. *cryſtalli, glandium, myrrhæ, thuris, an.* ℈ii. *corticis grannatorum, macis, cinnamomi, an.* ℈i. *fiat pulvis qui excipiatur mucagine gummi tragacanth. & formentur pyramides longæ, ſiccand. pro dentifricio.* Or, ℞. *rad. malvæ junioris, & biſmalvæ, an.* ʒii. *coquantur in aquâ ſalsâ aut aluminoſa, deinde ſiccentur in furno pro dentifricio.* ℞. *ſalis*, ʒvi. *alumin.* ʒiii. *thuris, maſtiches, ſanguis draconis, an.* ʒß. *aquæ roſ.* ʒvi. *diſtillentur in alembico vitreo pro dentrificio.*

Their uſe. Dentrifices are not onely good to poliſh, cleanſ, and ſtrengthen the teeth; but wee alſo oft-times uſe them for the tooth-ach, the diſeaſes of the mouth, and ulcers of gums. You may uſe them in the morning, before and after meat.

The ancients, of lentisk-wood made themſelvs tooth-picks, and ſuch deviſes to ſtrengthen their looſ teeth, which alſo at this daie is in uſe with thoſe of *Languedock*, with whom this wood is plentiful, ſo that it may bee brought thence for the uſe of Noblemen and Gentlemen; myrrh may alſo ſerv for this ſame uſe, and anie other aſtringent wood.

Our people commonly uſe the ſtalks of fennel; yet have they no facultie to faſten the teeth, but their ſmell is grateful.

## CHAP. XXXIX.

### *Of Bags or Quilts.*

PHyſicians term a bag or *ſacculus*, the compoſition or mixture of drie and powdred medicines put in a bag, therefore it is as it were a drie fomentation. Their differences are not drawn from anie other thing then from the varietie of the parts whereto they are applied: ſuch as are for the head muſt bee made into the faſhion of a cap, thoſe which bee for the whole ventricle muſt bee made into the form of a cithern; thoſe for the ſpleen, like to an ox's tongue: laſtly, ſuch as are for the liver, heart, and other parts, muſt bee made according to the figure of thoſe parts. Their matter is uſually taken from whole ſeeds fried in a frying-pan, or made into powder, there are ſomtimes added roots, flowers, fruits, rindes, cordial-powders, and other drie medicines, which may bee eaſily brought into powder, and conduce to the grieved parts; the quantitie is different according to the magnitude of the affected parts: In the books of practiſers it is commonly found preſcribed from ʒiii. to ʒviiß ſomtimes flowers, and drie herbs are preſcribed by handfuls and pugils: and here there is need of an artificial conjecture to conceiv and appoint a fit quantitie of powders: but let us give you ſom examples. What a bag or quilt is. Their differences.

℞. *roſar. rub.* p i. *maſtich.* ʒß. *coralli rub.* ʒiii. *ſem. aniſi, & fœnic. an.* ʒii. *nucis moſchat.* ʒi. *ſummitat. abſinth. & menth. an.* m i. *tritis omnibus, fiat ſacculus conſutus & compunctus pro ventriculo.* A quilt for the ſtomach.

℞. *furfuris macri,* p i. *milii,* ʒi. *ſalis,* ʒii. *roſar. rub. flor. roriſmarini, ſtœchados, caryoph. an.* m ii. *fol. beton. & ſalv. an.* ʒiii. *tritis omnibus fiat cucupha, interſuta & calefacta fumo thuris, & ſandarachæ exuſtorum, capiti apponatur.* A cap for a cold head.

℞. *flor. borag. bugloſ. & violar. an.* p ii. *cortic. citri ſicci, macis, ligni aloës, raſuræ eboris, an.* ʒi. *oſſis de corde cervi, croci, an.* ʒii. *fol. meliſ.* mß. *pulveris diambræ.* ʒ ß. *contritis omnibus fiat ſacculus è ſerico pro corde, irrorandus aquâ ſcabioſæ.* A quilt for the heart.

Wee uſe bags for the ſtrengthening of the noble parts; as the brain, heart, liver: as alſo for thoſe leſs noble; as the ſtomach: laſtly for diſcuſſing flatulencies in what part ſoever; as in the collick, and in a baſtard pleuriſie proceeding from flatulencies. The powders muſt bee ſtrawed upon carded bombaſt, that they run not together, and then they muſt bee ſewed up or quilted in a bag of linnen or taffatie. Their uſe.

Wee often-times moiſten theſe bags in wine or diſtilled water, and ſomtimes not with the ſubſtance thereof, but by the vapor onely of ſuch liquors put into a hot diſh: thus oft-times the bags are heated by the vapor onely, and oft-times at the fire in a diſh by often turning them. Theſe, if intended for the heart, ought to bee of crimſon or scarlet ſilk, becauſ the ſcarlet-berrie, called by the Arabians *Kermes*, is ſaid to refreſh and recreate the heart. Certainly they muſt alwaies bee made of ſom fine thing, whether it bee linnen or ſilk.

## CHAP. XL.

### *Of Fumigations.*

A *Suffitus* or fumigation is an evaporation of medicines having ſom viſcous and fattie moiſture: of fumigations ſom are drie, otherſom moiſt, the drie have the form of trochiſes or pills: their matter ought to bee fattie and viſcous, ſo that it may ſend forth a ſmoke by beeing burnt: ſuch are *ladanum*, myrrh, maſtich, pitch, wax, roſin, turpentine, *caſtoreum*, *ſtyrax*, frankincenſ, *olibanum*, and other gums, which may bee mixed with convenient powders: for they yeeld them a bodie and firm conſiſtence; the fumigations that are made of powders onely, yeeld neither ſo ſtrong nor long a fume. What a fumigation is. Their differences and matter.

The quantitie of the powders muſt bee from ʒß. to ʒiß. but the gums to ʒii. as, ℞. *ſandarachæ, maſtiches, roſar. an.* ʒi. *benioini, galang. an.* ʒiii. *terebinthina excipiantur, & fiant trochiſci, quibus incenſis ſuffumigentur tegumenta capitis.* A cephalick fume.

℞. *marchaſitæ,* ʒii. *bdellii, myrrhæ, ſtyracis, an.* ʒiß. *ceræ flavæ, & terebinth. quod ſufficit, fiant formulæ pro ſuffumigio.* For the hardneſs of the ſinews.

℞. *cinnabaris,* ʒii. *ſtyracis & benzoini, an.* ʒii. *cum terebinth. fiant trochiſci pro ſuffumigio per embotum.*

Wee uſe fumigations in great obſtructions of the brain, ulcers of the longs, the *aſthma*, an old cough, pains of the ſides, womb, and the diſeaſes of ſom other parts; ſomtimes the whole bodie is fumigated, as in the cure of the *Lues venerea* to procure ſweat: ſomtimes onely ſom one part whereto ſom relicks of the *Lues* adhere's; ſuch fumigations are made of *cinnabaris*, wherein there is much *hydrargyrum*. The fume muſt bee received by a funnel, that ſo it may not bee diſperſed, but may all bee carried unto the part affected, as is uſually don in the affects of the womb and ears. For the relicks of the *Lues venerea*. The manner of uſing them.

In fumigations for the brain and cheſt, the vapor would bee received with open mouth; which thence may paſs by the weaſon into the cheſt, by the palat and noſtrils into the brain: but in the interim let the head bee vailed, that none of the vapor may flie away. Moiſt fumigations are made ſomwhiles of the decoction of herbs, otherwhiles of ſom one ſimple medicine boiled in oil, ſomtimes a hot fire-ſtone is quench't in vineger, wine, *aqua vitæ*, or the like liquor, ſo to raiſ a humid vapor. Wee oft-times uſe this kinde of fumigation in overcomming ſcirrous affects, when as wee would cut, diſcuſs, penetrate deep, and drie: take this as an example thereof.

The manner of a moiſt fumigation.

℞. *laterem unum ſatis craſſum, aut marchaſitam ponderis* ℔i. heat it red hot, and then let it bee quencht in ſharp vineger, powring thereon in the mean while a little *aqua vitæ*, make a fumigation for the grieved part.

Fumes of the decoction of herbs do verie little differ from fomentations properly ſo called; for they differ not in the manner of their compoſure, but onely in the application to the affected parts: therefore let this bee an example of a humid fumigation.

A moiſt fume for the ears.

℞. *abſinth. ſalv. rut. origan. an.* p i. *rad. bryon. & aſar. an.* ʒß. *ſem. ſinap. & cumin. an.* ʒii. *decoquantur in duabus partibus aquæ, & unâ vini pro ſuffitu auris cum emboto:* and oft-times ſuch fumigations are made for the whole bodie, whereof wee ſhall treat hereafter.

## CHAP. XLI.

### *Of a particular, or half-bath.*

What an *inſeſſus* is.

A *Semicupium* or half-bath, is a bath for the one half of the bodie; that is, for the parts from the bellie downwards: it is called alſo an *inſeſſio*, becauſ the patient ſitteth to bathe in the decoction of herbs: in which form and reſpect a *ſemicupium* differ's from a fomentation; for it is compoſed of the ſame matter, to wit, a decoction of herbs, roots, ſeeds, fruits, but in this the quantitie of the decoction is the greater, as wee ſhall teach by the following example.

The matter.

A half-bath for the ſtone in the kidnies.

℞. *malv. biſmalv. cum toto, an.* m i ß. *beton. ſaxifrag. pariet. an.* m i. *ſem. melon. milii ſolis, alkekengi, an.* ʒiii. *cicer. rub.* p. ii. *rad. apii, graminis, fœniculi, eryngii, an.* ʒ i. *decoquantur in ſufficiente aquæ pro inſeſſu.*

The uſe.

Wee uſe theſe half-baths in affects of the kidnies, bladder, womb, fundament, and lower bellie, or otherwiſe when as the patient by reaſon of weakneſs and fear of diſſipating the ſpirits, cannot ſuffer or away with a whole bath. The manner of uſing it is thus: Fill ſom bags with the boiled herbs, or other parts of plants, and cauſ the patient to ſit upon them; yet in the interim keep the vapors from the head, leſt they ſhould offend it, by caſting over it a linnen-cloth, or elſ let him not enter thereinto until the vapor bee exhaled.

The manner of uſing it.

## CHAP. XLII.

### *Of Baths.*

BAths are nothing elſ then as it were a fomentation of the whole bodie, both for preſerving health, and the cure of diſeaſes: this is a verie commodious form of medicine, and among other external medicines much celebrated by the Greek, Arabian, and Latine Phyſicians. For a bath, beſides that it digeſt's the acrid humors, and ſootie excrements lying under the skin, mitigate's pains and wearineſs, and correct's all exceſs of diſtemper: moreover, in the cure of fevers, and manie other contumacious and inveterate diſeaſes it is the chief and laſt remedie, and as it were the refuge of health, ſtored with pleaſing delight. Baths are of two ſorts, ſom natural, others artificial: natural, are thoſe which of their own accord, without the operation or help of art, prevail or excel in anie medicinal qualitie. For the water which of it ſelf is devoid of all qualitie that is perceivable by the taſte, if it chance to bee ſtrained through the veins of metals, it furniſhe's and impregnate's it ſelf with their qualities and effects: hence it is that all ſuch water excel's in a drying facultie, ſomtimes with cooling and aſtriction, and otherwhiles with heat and a diſcuſſing qualitie. The baths whoſe waters beeing hot or warm, do boil up, take their heat from the cavities of the earth and mines filled with fire; which thing is of much admiration whence this fire ſhould ariſe in ſubterrene places, what may kindle it, what feed or nouriſh it for ſo manie years, and keep it from beeing extinct. Som Philoſophers would have it kindled by the beams of the ſun, others by the force of lightning penetrating the bowels of the earth, others by the violence of the air vehemently or violently agitated, no otherwiſe then fire is ſtruck by the colliſion of a flint and ſteel. Yet it is better to refer the cauſ of ſo great an effect unto God the maker of the Univerſ, whoſe providence piercing everie waie into all parts of the World, enter's and govern's the ſecret parts and paſſages thereof. Notwithſtanding they have ſeemed to have com neareſt the truth, who refer the cauſ of heat in waters unto the ſtore of brimſtone conteined in certain places of the earth, becauſ among all minerals it hath moſt fire and matter fitteſt for the nouriſhing thereof. Therefore to it they attribute the flames of fire which the Sicilian mountain *Ætna* continually ſend's forth. Hence alſo it is that the moſt part of ſuch waters ſmell of Sulphur, yet others ſmell of Alum, others of Nitre, others of Tar, and ſom of Coperas.

The faculties of Baths.

Their differences.

Natural Baths

How to know whence the Baths have their efficacie.

Now you may know from the admixture of what metalline bodies the waters acquire their faculties by their taſte, ſent, color, mud, which adhere's to the channels through which the water run's, as alſo by an artificial ſeparation of the more terreſtrial parts from the more ſubtil. For the earthie droſs which ſubſides or remain's by the boiling of ſuch waters, will retein the faculties and ſubſtance of brimſtone, alum, and the like minerals: beſides alſo, by the effects and the cure of theſe or theſe diſeaſes, you may alſo gather of what nature they are. Wherefore wee will deſcribe each of theſe kindes of waters by their effects, beginning firſt with the Sulphureous.

Sulphureous waters powerfully heat, drie, reſolv, open, and draw from the center unto the ſurface

surface of the bodie; they cleans the skin troubled with scabs and tetters; they ceas the itching of ulcers, and digest and exhaust the causses of the gout, they help pains of the colick and hardened spleens. But they are not to bee drunk, not onely by reason of their ungrateful smell and taste, but also by reason of the malitiousnes of their substance, offensive to the inner parts of the bodie, but chiefly to the liver. The condition of natural sulphureous waters.

Aluminous waters tast verie astrictively, therefore they drie powerfully, they have no such manifest heat, yet drunk, they loos the bellie: I beleev by reason of their heat and nitrous qualitie they cleans and staie defluxions, and the courses flowing too immoderately; they also are good against the tooth-ach, eating ulcers, and the hidden abscesses of the other parts of the mouth. Of aluminous waters.

Salt and nitrous waters shew themselvs sufficiently by their heat: they heat, drie, binde, cleans, discuss, attenuate, resist putrefaction, take away the blackness comming of bruises, heal scabbie and malign ulcers, and help all œdematous tumors. Of salt and nitrous.

Bituminous waters heat, digest, and by long continuance soften the hard'ned sinews; they are different according to the various conditions of the bitumen that they wash, and partake of the qualities thereof. Of bituminous.

Brasen waters, that is, such as retain the qualities of brass; heat, drie, cleans, digest, cut, binde, are good against eating ulcers, fistula's, the hardness of the eie-lids, and they waste and eat away the fleshlie excrescences of the nose and fundament. Of brasen.

Iron water's, cool, drie, and binde powerfully, therefore they help abscesses, hardened milts, the weaknesses of the stomach and ventricle, the unvoluntarie shedding of the urine, and the too much flowing terms, as also the hot distemper of the liver and kidnies. Som such are in Lucan territorie in *Italie*. Of iron.

Leaden water's, refrigerate, drie, and perform such other operations as lead doth; the like may bee said of those waters that flow by chalk, plaster, and other such minerals, as which all of them take and perform the qualities of the bodies by which they pass. Of Leaden.

Hot waters or baths help cold and moist diseases; as the palsie, convulsion, the stiffnes and attraction of the nervs, trembling, palpitations, cold distillations upon the joints, the inflations of the members by a dropsie, the jaundis by obstruction of a gross, tough, and cold humor, the pains of the sides, colick, and kidnies, barrenness in women, the suppression of their courses, the suffocation of the womb, causless wearines: those diseases that spoil the skin; as tetters, the leprosie of both sorts, the scab, and other diseases arising from a gross, cold, and obstructing humor, for they provoke sweats. Of hot baths

Yet such must shun them as are of a cholerick nature, and have a hot liver, for they would caus a *Cachexia* and dropsie by over-heating the liver. Cold waters or baths heal the hot distemper of the whole bodie and each of the parts thereof, and they are more frequently taken inwardly then applied outwardly; they help the laxnes of the bowels, as the resolution of the retentive facultie of the stomach, entrals, kidnies, bladder, and they also add strength to them. Wherefore they both temper the heat of the liver, and also strengthen it, they staie the *Diarrhæa*, Dysenterie, Courses, unvoluntarie shedding of urine, the *Gonnorrhæa*, Sweats, and Bleedings. In this kinde are chiefly commendable the waters of the Spaw in the countrie of *Liege*, which inwardly and outwardly have almost the same facultie, and bring much benefit without anie inconvenience, as those that are commonly used in the drinks and broths of the inhabitants. To whom hurtful. The faculties of cold-baths. The Spaw.

In imitation of natural baths, there may in want of them bee made artifical ones, by the infusing and mixing the powders of the formerly described minerals; as, Brimstone, Alum, Nitre, *Bitumen*: also you may manie times quench in common or rain-water, iron, brass, silver and gold heated red hot, and so give them to bee drunk by the patient, for such waters do oft-times retein the qualities and faculties of the metals quenched in them, as you may perceiv by the happie succes of such as have used them against the Dysenterie. Of artificial baths.

Besides these, there are also other baths made by art of simple water, somtimes without the admixture of anie other thing, but otherwhiles with medicinal things mixed therewith, and boiled therein. But after what manner soever these bee made, they ought to bee warm, for warm-water humect's, relaxe's, mollifie's the solid parts, if at anie time they bee too drie, hard, and dens; by the ascititious heat it open's the pores of the skin, digest's attract's, and discusses fuliginous and acrid excrements remaining between the flesh and the skin. It is good against sun-burning and wearines, whereby the similar parts are dried more then is fit. To conclude, whether wee bee too hot or cold, or to drie, or bee nauseous, wee finde manifest profits by baths made of sweet or warm-water, as those that may supplie the defect of frictions and exercises: for they bring the bodie to a mediocritie of temper, they increas and strengthen the native color, and by procuring sweat discuss flatulencies: therefore they are verie useful in hectick fevers, and in the declension of all fevers, and against raving and talking idlely, for the procure sleep. But becaus water alone cannot long adhere to the bodie, let oil bee mixed or put upon them, which may hold in the water, and keep it longer to the skin. The faculties of a bath of warm-water. Why wee put oil into baths.

These baths are good against the inflammations of the lungs and sides, for they mitigate pain, and help forward that which is suppurated to exclusion, when as general remedies according to art have preceded, for otherwise they will caus a greater defluxion on the afflicted parts:

for a bath (in *Galen's* opinion) is profitably uſed to diſeaſes when as the morbifick matter is concocted. To this purpoſe is choſen rain-water, then river-water, ſo that it bee not muddie, and then fountain-water; the water of ſtanding-lakes and fens is not approoved of, for it is fit that the water which is made choiſ of for a bath of ſweet water, ſhould bee light and of ſubtil parts, for baths of waters which are more then immoderately hot or cold yeeld no ſuch commoditie; but verily they hurt in this, that they ſhut up or cloſe the pores of the bodie, and keep in the ſuliginous excrements under the skin; other baths of ſweet or freſh water conſiſt of the ſame matter as fomentations do, whence it is that ſom of them relax, others mitigate pain, others cleanſ, and otherſom procure the courſes, that is compounded of a decoction of ingredients or plants having ſuch operations. To theſe there is ſomtimes added wine, other whiles oil, ſomtimes freſh butter or milk, as when the urine is ſtopped, when nephiritick pains are violent, when the nervs are contracted, when the habit of the bodie waſte's and wrinkles with a hectick drineſs, for this corrugation is amended by relaxing things, but it is watred, and as it were fatted by humecting things, which may penetrate and transfuſe the oilie or fattie humiditie into the bodie thus rarified and opened by the warmneſs of a bath.

Anodyne baths are made of a decoction of medicines of a middle nature, ſuch as are temperate and relaxing things, with which wee may alſo ſomtimes mix reſolving things; they are boiled in water and wine, eſpecially in pains of the colick proceeding from vitreous phlegm, or groſs and thick flatulencies conteined or ſhut up in the bellie, kidnies, or womb. In ſuch baths it is not fit to ſweat, but onely to ſit in them ſo long until the bitterneſs of the pain bee aſſwaged or mitigated, leſt the powers, weakned by pain, ſhould bee more reſolved by the breaking forth of ſweat: emollients are ſomtime mixed with gentle detergents, when as the skin is rough and cold, or when the ſcails or cruſt of ſcabs is more hard then uſual, then in concluſion, wee muſt com to ſtrong deterſives and driers; laſtly to drying and ſomwhat aſtrictive medicines ſo to ſtrengthen the skin, that it may not yeeld it ſelf ſo eaſie and open to receiv defluxions. By giving you one example the whole manner of preſcribing a bath may appear.

Why wee muſt not continue in the bath till wee ſweat.

A mollifying and anodyne bath.

℞. *rad. lilior. abbor. biſmalv. an.* ℔ii. *malv. pariet. violar. an.* mſs *ſem. lini, fænug. biſmalv. an.* ℔i. *flor. cham. melil. aneth. an.* p vi. *fiat decoctio in ſufficienti aquæ quantitate, cui permiſcito olei liliorum & lini ana,* ℔ii. *frat balneum in quo diutiùs natet æger.*

Cautions to bee obſerved in the uſe of baths.

Baths though noble remedies approoved by uſe and reaſon, yet unleſs they bee fitly and diſcreetly uſed in time, plentie, and qualitie, they do much harm; for they cauſ ſhakings and chilneſs, pains, denſitie of the skin, or too much rarefaction thereof, and oft-times a reſolution of all the faculties. Wherefore a man muſt bee mindeful of theſe cautions before hee enter into a bath: Firſt, that there bee no weakneſſe of anie noble and principal bowel, for the weak parts eaſily receiv the humors which the bath hath diffuſed and rarified, the waies lying open which tend from the whole bodie to the principal parts. Neither muſt there bee anie plentie of crude humors in the firſt region, for ſo they ſhould bee attracted and diffuſed over all the bodie: therefore it is not onely fit that general purgations ſhould precede, but alſo particular by the bellie and urine: beſides, the patient ſhould bee ſtrong, that can faſting endure a bath as long as it is needful. Laſtly, the bath ought to bee in a warm and ſilent place, leſt anie cold air by it's blowing, or the water by it's cold appulſ, cauſ a ſhivering or ſhaking of the bodie whence a fever may enſue.

The fitteſt time for bathing.

The morning is a fit time for bathing, the ſtomach beeing faſting and emptie, or ſix hours after meat, if it bee requiſite that the patient ſhould bathe twice a daie, otherwiſe the meat yet crude would bee ſnatched by the heat of the bath out of the ſtomach into the veins and habit or the bodie. Manie, of all the ſeaſons of the year, make choiſ of the ſpring and end of ſummer and in theſe times they chuſe a clear daie, neither troubled with ſtormie windes, nor too ſharp an air. As long as the patient is in the bath, it is fit that hee take no meat, unleſs peradventure to comfort him hee take a little bread moiſtened in wine, or the juice of an orange, or ſom damask-prunes to quench his thirſt: his ſtrength will ſhew how long it is fit that hee ſhould ſtaie in, for hee muſt not ſtaie there to the reſolution of his powers, for in baths the humid and ſpirituous ſubſtance is much diſſipated. Comming forth of the bath, they muſt preſently get them to bed, and bee well covered, that by ſweating, the excrements, drawn unto the skin by the heat of the bath, may break out: the ſweat cleanſed, let them uſe gentle frictions, or walking, then let him feed upon meat of good juice and eaſie digeſtion, by reaſon that the ſtomach cannot but bee weakned in ſom ſom ſort by the bath.

How to order the patient comming forth of the bath.

That quantitie of meat is judged moderate, the weight whereof ſhall not oppreſs the ſtomach: venerie after bathing muſt not bee uſed, becauſ to the reſolution of the ſpirit by the bath, it add's another new cauſ of further ſpending or diſſipating them. Som wiſh thoſe that uſe the bath by reaſon of ſom contraction, pain, or other affects of the nervs, preſently after bathing, to dawb or beſmear the affected nervous part with the claie or mud of the bath, that by making it up as it were in this paſte, the virtue of the bath may work more effectually, and may more throughly enter into the affected part.

Theſe cautions beeing diligently obſerved, there is no doubt but the profit by bathes will bee great and wonderful: the ſame things are to bee obſerved in the uſe of ſtoves or hot-houſes, for the uſe and effect of baths and Hot-houſes is almoſt the ſame, which the antients therefore uſed by turn, ſo that comming forth of the bath they entred a ſtove and called it alſo

by

by the name of a bath, as you may gather from ſundrie places of *Galen* in his *Methodus med.* wherefore I think it fit in the next to ſpeak of them.

## CHAP. XLIII.

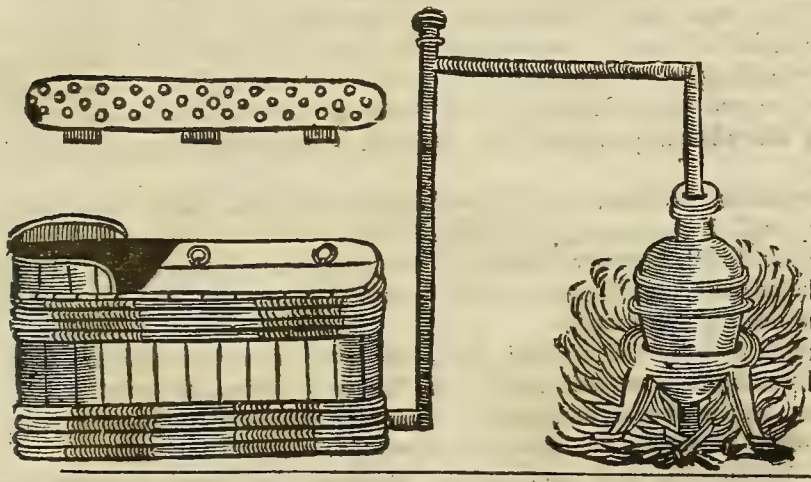
### *Of Stoves or Hot-houſes.*

STOves are either drie or moiſt: Drie, by raiſing a hot and drie aërie exhalation, ſo to imprint their faculties in the bodie, that it thereby waxeth hot, and the pores beeing opened, run down with ſweat. There are divers waies to raiſ ſuch an exhalation: at *Paris*, and whereſoever there are ſtoves or publick hot-houſes, they are raiſed by a clear fire put under a vaulted fornace, whence it beeing preſently diffuſed, heat's the whole room; Yet everie one may make himſelf ſuch a ſtove as hee ſhall judge beſt and fitteſt. The differences of Stoves. How made.

Alſo you may put red hot cogle-ſtones or bricks into a tub, having firſt laid the bottom thereof with bricks or iron-plates, and ſo ſet a ſeat in the mid'ſt thereof, wherein the patient ſitting, well covered with a canopie drawn over him, may receiv the exhalation ariſing from the ſtones that are about him, and ſo have the benefit of ſweating: but in this caſe wee muſt oft look to and ſee the patient, for it ſomtimes happen's that ſom, neglected by their keepers otherwiſe emploied, becoming faint, and their ſenſ failing them by the diſſipation of their ſpirits by the force of the hot exhalation, have ſunk down with all their bodies upon the ſtones lying under them, and ſo have been carried half dead and burn't into their beds. Som alſo take the benefit of ſweating in a fornace or oven, as ſoon as bread is drawn out thereof. But I do not much approov of this kind of ſweating, becauſ the patient cannot as hee will, much leſs as hee pleaſeth, lie or turn himſelf therein.

Humid ſtoves or ſudatories are thoſe wherein ſweat is cauſſed by a vapor or moiſt heat: this vapor muſt bee raiſed from a decoction of roots, leavs, flowers, and ſeeds, which are thought fit for this purpoſe; the decoction is to bee made in water or wine, or both together. Therefore let them all bee put into a great veſſel well luted, from the top of whoſe cover iron or tin-pipes may com into the bathing-tub ſtanding near thereto, between the two bottoms thereof, by means whereof the hot vapor may enter thereinto, and diffuſe it ſelf therein. Now it is fit the bathing-tub ſhould bee furniſhed with a double bottom, the one below and whole, the other ſomwhat higher and perforated with manie holes, whereupon the patient ſitting may receiv a ſudorifick vapor over all his bodie: now this vapor, if at anie time it becom too hot, muſt bee tempered by opening the hole, which muſt for the ſame purpoſe bee made in the top of the pipe, that ſo it may bee opened and ſhut at pleaſure. In the interim the tub ſhall bee cloſely covered wherein the patient ſit's, hee putting forth onely his head, that ſo hee may draw in the cool air. In defect of ſuch pipes, the herbs ſhall bee boiled by themſelvs in a caldron or kettle, and this ſhall bee ſet thus hot into the bathing-tub at the patient's feet, and ſo by caſting into it heated ſtones, a great and ſudorifick vapor ſhall bee raiſed. A vapourous ſtove or bath

*The delineation of a bathing Tub, having a double bottom, with a veſſel neat thereto, with pipes comming therefrom, and entring between the two bottoms of the Tub.*



## CHAP. XLIV.

### *Of* Fuci, *that is waſhes, and ſuch things for the ſmoothing and beautifying of the skin.*

THis following diſcourſ is not intended for thoſe women which addicted to filthie luſt, ſeek to beautifie their faces, as baits and allurements to filthie pleaſures: but it is intended for thoſe onely, which the better to reſtrain the wandring luſts of their husbands, may endevour by art to take away thoſe ſpots and deformities which have happened to fall on their faces either by accident or age.

The color that appear's in the face, either laudable or illaudable, abundantly ſhew's the temper both of the bodie, as alſo of thoſe humors that have the chief dominion therein: for everie humor die's the skin of the whole bodie, but chiefly of the face with the color thereof: for choler bearing ſwaie in the bodie, the face look's yellowiſh; phlegm ruling, it look's whitiſh or pale; if melancholie exceed, then blackiſh or ſwarth; but if blood have As the color of the skin is ſuch is the humor that is thereunder.

have the dominion, the color is freſh and red. Yet there is other things happening externally which change the native color of the face, as ſun-burning, cold, pleaſure, ſorrow, fear, watching, faſting, pain, old diſeaſes, the corruption of meats and drinks: for the flouriſhing color of the cheeks is not onely extinguiſhed by the immoderate uſe of vineger, but by drinking of corrupt waters the face becom's ſwoln and pale.

On the contrarie, laudable meats and drinks make the bodie to bee well colored and comly, for that they yield good juice, and conſequently a good habite. Therefore if the ſpots of the face proceed from the plenitude and ill diſpoſition of humors, the bodie ſhall bee evacuated by blood-letting; if from the infirmitie of anie principal bowel, that muſt firſt of all bee ſtrengthened; but the care of all theſe things belong's to the Phyſician: wee here onely ſeek after particular remedies which may ſmooth the face, and take away the ſpots, and other defects thereof, and give it a laudable color.

Waters wherewith to waſh the face.

Firſt the face ſhall bee waſhed with the water of lillie-flowrs, of bean-flowers, water-lillies, of diſtilled milk, or elſ with the water wherein ſom barlie or ſtarch hath been ſteeped. The dried face ſhall bee anointed with the ointments preſently to bee deſcribed; for ſuch waſhing cleanſeth and prepareth the face to receiv the force of the ointments, no otherwiſe then an alumed lee prepair's the hairs to drink up and retein the color that wee deſire. Therefore the face beeing thus cleanſed and prepared, you may uſe the following medicines, as thoſe that have a facultie to beautifie, extend, and ſmooth the skin: as,

Compound liquors where with to waſh the face. Virgin's milk.

℞. *gum. tragacanth. conquaſſ.* ʒii. *diſtemperentur in vaſe vitrio cum* ℔ ii. *aquæ communis, ſic gummi diſſolventur, inde albeſcet aqua.* Or elſ. ℞. *litharg yri auri,* ʒii. *ceruſ. & ſalis com. an.* ʒ ß. *aceti aquæ plantag. an.* ʒ ii. *caphur.* ʒ ß. *macerentur litharg yros & ceruſa in aceto ſeorſim per tres aut quatuor horas, ſal vero et camphora in aqua quam inſtituto tuo aptam delegeris:* then filter them both ſeveral, and mix them together beeing ſo filtred, when as you would uſe them.

℞. *lactis vaccini,* ℔ ii. *aranciorum et limon. an.* nu. iv. *ſaccari albiſsimi, et alum, roch. an.* ʒ i. *diſtillentur omnia ſimul:* let the limmons and oranges bee cut into ſlices, and then bee infuſed in milk, adding thereto the ſugar and alum; then let the mall bee diſtilled together in *balneo Mariæ*; the water that com's thereof will make the face ſmooth and lovelie. Therefore about bedtime it will bee good to cover the face with linnen-clothes dipped therein. A water alſo diſtilled of ſnails gathered in a vine-yard, juice of limmons, the flowers of white mullain mixed together in equal proportion with a like quantitie of the liquor contained in the bladders of Elm-leavs, is verie good for the ſame purpoſe. Alſo this,

℞. *micæ panis albi,* ℔ iv. *flor. fabar. roſar. alb. flor. nænuph. lilior. & in ireos, an.* ℔ ii. *lactis vaccini,* ℔ vi' *ova.* nu. viii. *aceti opt.* ℔ i. *diſtillentur omnia ſimul in alembico vitreo, & fiat aqua ad faciei et manuum lotionem.* Or, ℞. *olei de tartaro,* ʒ iii. *mucag. ſem. pſilii,* ʒ i. *ceruſ. in oleo roſ. diſſolut.* ʒ iß. *borac, ſal. gem. an.* ʒ i. *fiat linimentum pro facie.* Or, ℞. *caponem vivum, et caſeum ex lacte caprino recentur confectum, limon.* nu. iv. *ovor.* nu. iv. *ceruſ lot. in aq. roſar.* ʒ ii. *boracis,* ʒ i ß. *camph.* ʒ ii. *aq. flor. fabar.* ℔ iv. *fiat omnium infuſio per* xxiv. *horas, poſtea diſtillentur in alembico vitreo.*

The marrow of ſheeps-bones good to ſmooth the face.

There is a moſt excellent *fucus* made of the marrow of ſheeps-bones, which ſmooth's the roughneſs of the skin, beautifie's the face; now it muſt bee thus extracted. Take the bones, ſevered from the fleſh by boiling, beat them, and ſo boil them in water, when they are well boiled, take them from the fire, and when the water is cold, gather the fat that ſwim's upon it, and therewith anoint your face when as you go to bed, and waſh it in the morning with the formerly preſcribed water.

How to make *Salceruſſæ.*

℞. *ſalis ceruſſ:* ʒ ii. *ung. citrin. vel ſpermat. ceti,* ʒ i. *malaxentur ſimul. et fiat linimentum, addendo olei ovor.* ʒ ii. The *Sal ceruſſæ* is thus made, grinde Ceruſs into verie fine powder, and infuſe ℔ i. thereof in a pottle of diſtilled vineger for four or five daies, then filter it, then ſet that you have filtred in a glaſed earthen veſſel over a gentle fire until it concrete into ſalt, juſt as you do the *capitellum* in making of cauteries.

℞. *excrementi lacert. oſsis ſæpiæ, tartari, vini albi, raſur. corn. cerv. farin. oriz. an. partes æquales, fiat pulvis, infundatur in aqua diſtillata amygdalarum dulcium, limacum vinialium, flor. nenuph. huic addito mellis albi par pondus:* let them bee all incorporated in a marble mortar, and kept in a glaſs or ſilver veſſel, and at night anoint the face herewith; it wonderfully prevails' againſt the redneſs of the face, if after the annointing it you ſhall cover the face with a linnen cloth moiſtened in the former deſcribed water.

℞. *ſublim.* ʒ i. *argent. viv. ſaliv. extinct.* ʒ ii. *margarit. non perforat.* ʒ i. *caph.* ʒ i ß. *incorporentur ſimul in mortario marmoreo, cum piſtillo ligneo, per tres horas ducantur et fricentur, reducantârque in tenuiſſimum pulverem, confectus pulvis abluatur aquâ myrti et deſiccetur, ſerveturque ad uſum, adde foliorum auri et argenti,* nu. x. When as you would uſe this powder, put into the palm of your hand a little oil of maſtic, or of ſweet-almonds, then preſently in that oil diſſolv a little of the deſcribed powder, and ſo work it into an ointment, wherewith let the face bee anointed at bed-time: but it is fit firſt to waſh the face with the formerly deſcribed waters, and again in the morning when you riſe.

How to paint the face.

When the face is freed from wrincles ank ſpots, then may you paint the cheeks with a roſie and flouriſhing color; for of the commixture of white and red ariſeth a native and beautiful color: for this purpoſe take as much as you ſhall think fit of braſil, and alchunet; ſteep them in alum-water, and therewith touch the cheeks and lips, and ſo ſuffer it to drie in: there is

alſo

alſo ſpaniſh red made for this purpoſe; others rub the mentioned parts with a ſheep's-skin died red: moreover the friction that is made by the hand onely, cauſſeth a pleaſing redneſs in the face, by drawing thither the blood and ſpirits.

## CHAP. XLV.

### *Of the* Gutta Roſacea, *or a fierie face.*

THis treatiſe of *Fuci* put's mee in minde to ſaie ſomthing in this place of helping the preternatural redneſs which poſſeſſeth the noſe and cheeks, and oft-times all the face beſides, one while with a tumor, otherwhiles without, ſomtimes with puſtles and ſcabs, by reaſon of the admixtion of a nitrous and aduſt humor. Practitioners have termed it *Gutta roſacea*. This ſhew's both more and more uglie in winter then in ſummer, becauſ the cold cloſeth the pores of the skin, ſo that the matter contained thereunder is pent up for want of tranſpiration, whence it becom's acrid and biting, ſo that as it were boiling up, it lift's or raiſeth the skin into puſtles and ſcabs; it is a contumacious diſeaſ, and oft-times not to bee helped by medicine. Why worſ in winter then in ſummar.

For the general method of curing this diſeaſ, it is fit that the patient abſtein from wine, and from all things in general that by their heat inflame the blood, and diffuſe it by their vaporous ſubſtance: hee ſhall ſhun hot and verie cold places, and ſhall procure that his bellie may bee ſoluble, either by nature or art. Let blood firſt bee drawn out of the *baſilica*, then from the *vena frontis*, and laſtly from the vein of the noſe. Let leeches bee applied to ſundrie places of the face, and cupping-glaſſes with ſcarification to the ſhoulders. Diet.

For particular or proper remedies, if the diſeaſ bee inveterate, the hardneſs ſhall firſt bee ſoft'ned with emollient things, then aſſaulted with the following ointments, which ſhall bee uſed or changed by the Chirurgian as the Phyſician ſhall think fit. Remedies.

℞. *ſucci citri*, ℥iii. *ceruſ. quantum ſufficit ad eum inſpiſſandum, argenti vivi cum ſaliva et ſulphure vivo exſtincti*, ℥ß. *incorporentur ſimul, et fiat unguentum.* An approved ointment.

℞. *boracis*, ℥ ii. *farin. cicer. et fabar. an.* ℥ i ß. *caph.* ℥ i. *cum melle et ſucco cepæ fiant trochiſci*: when you would uſe them, diſſolv them in roſe and plantain-water and ſpread them upon linnen clothes, and ſo applie them on the night-time to the affected parts, and ſo let them oft times bee renued.

℞. *unguenti citrini recenter diſpenſati*, ℥ ii. *ſulphuris vivi*, ℥ ß. *cum modico olei ſem. cucurb. et ſucci limonum, fiat unguentum*; with this let the face be anointed when you go to bed, in the morning let it bee waſhed away with roſe-water, beeing white by reaſon of bran infuſed therein: moreover, ſharp vineger boiled with bran and roſe-water, and applied as before, powerfully take's away the redneſs of the face.

℞. *ceruſ. & litharg. auri, ſulphuris vivi pulveriſati, an*, ℥ ß. *ponantur. in phiala cum aceto & aqua roſarum*: linnen cloths dipped herein ſhall bee applied to the face on the night, and it ſhall bee applied to the face on the night, and it ſhall bee waſhed in the morning with the water of the infuſion of bran: this kind of medicine ſhall bee continued for a month.

℞. *ſanguinis tauri*, ℔ i. *butyri recentis*, ℔ ß. *fiat diſtillatio, utatur.* The liquor which is diſtilled for the firſt daies is troubled and ſtinking, but theſe paſſed, it becometh clear and well ſmelling. Som boil bran in vineger and the water of water-lilies, and in this decoction they diſſolv of *ſulphur* and camphire a fit proportion to the quantitie of the decoction, and they applie cloths moiſtened in this medicine to the face in the evening.

℞ *album. ovor.* nu. ii. *aquæ roſ.* ℥ i ß. *ſucci plantag. & lapath. acut. an.* ℥ i ß. *ſublimati*, ℈ i. *incorpopentur in mortario marmoreo.* ℞. *axung. porci decies in aceto lotæ*, ℥iv. *argenti vivi*, ℥ i. *aluminis, ſulphuris vivi, au.* ℥ i. *piſtentur omnia diu in mortario plumbeo, & fiat unguentum*; *argentum vivum non debet niſi extremo loco affundi.* ℞. *rad. lapath. acut. & aſphodel. an.* ℥ ii. *coquantur in aceto ſcillitico, poſtea tundantur, et ſetaceo trajiciantur, addendo auripigmenti*, ℥ ii. *ſulphuris vivi*, ℥ x. let them bee incorporated and make an ointment to bee uſed to drie up the puſtles.

℞. *rad. liliorum ſub cineribus coctorum*, ℥ iv. *piſtillo tuſis, et ſetaceo trajectis, adde butyri recentis, et axung. porci, lotæ in aceto, an.* ℥ i. *ſulphuris vivi*, ℥ iii. *camphor.* ℈ iii. *ſucci limonum quantum ſufficit, malaxentur ſimul et fiat unguentum.* ℞. *lactis virginalis*, ℔ ß. *aluminis*, ℥ ß. *ſulphuris vivi*, ℥ i. *ſucci limonum*, ℥ iv. *ſalis com.* ℥. ß. let them all bee diſtilled in a glaſs alembick, and the water kept for the forementioned uſes. To drie up the puſtels.

℞, *lapath. acut. plantagin. et aſphodel. an.* ℥ i ß. *olei vitel. ovor.* ℥ i. *terebinth. venet.* ℥ ß. *ſucci limonum*, ℥ iii. *aluminis combuſt.* ℥ i. *argenti vivi exſtinct.* ℥ i. *olei liliorum*, ℥ ß. *tundantur omnia in mortario plumbeo, addendo ſub finem argent. viv. nè mortario adhæreſcat.* The juice of onions beaten with ſalt, or the yelks of eggs are good for the ſame purpoſe.

For ſtaying and killing of Ring-worms and Tetters, the leavs of hellebore beaten with vineger are good, the milk of the fig-tree is good of it ſelf, as alſo that of the ſpurges, or muſtard diſſolved in ſtrong vineger with a little ſulphur. Or, To kill tetters.

℞. *ſulphuris, calcanthi, & aluminis, an.* ℥ i. *macerentur in aceto forti, trajiciantur per lineum*, applie the expreſſed juice. Others macerate an egg in ſharp vineger, with coperas and *ſulphur vivum* beaten into fine powder, then they ſtrain or preſs it through a linnen cloth.

But ſeeing the forementioned medicines are acrid, and for the moſt part eating and corroding,

ding, it cannot bee but that they muſt make the skin harſh and rough, therefore to ſmooth and levigate it again, you ſhall make uſe of the following ointment.

To ſmooth the skin. ℞. *tereb. ven. tam diu lotæ, ut acrimoniam nullam habeat, butyri ſalis expertis, an.* ℥ i ß. *olei vitel. ovor.* ℥ i. *axung. porci in aquâ roſarum lotæ,* ℥ ß. *ceræ parum, fiat linimentum ad uſum.* To the ſame purpoſe you may alſo make uſe of ſom of the foremeutioned medicines.

## CHAP. XLI.

### *To black the hair.*

What things are fit to die the hair. AT firſt the hairs, (to take the *fucus* or tincture, and to retain it) muſt bee prepared with Lie, wherein a little roch-Alum is diſſolved. Thus the fattie ſcales may bee waſhed and taken away, which hinder, and (as it were) keep away the *fucus*, that it cannot adhere or penetrate into the bodie of the hair. Then muſt wee com to particular or proper and fitting medicines for this purpoſe. Theſe ought to bee aromatick and cephalick, and ſomwhat ſiptick, that by their odoriferous & aſtringent power they may ſtrengthen the animal facultie. Furthermore, they muſt beof ſubtil parts, that they may enter even into the inner roots ofthe hairs.

℞. *Sulphuris, vitrioli, gallarum, calcis vivæ, litharg yri, an.* ℥ ii. *ſcoriæ ferri,* ℥ ß. *in pollinem reducantur, et cum aq. communi incorporentur, ut indè fiat maſſa:* with this at bed time let the hairs bee rubbed, and in the morning let them bee ſmoothed with the ſame.

℞. *calcis lotæ,* ℥ i *litharg yri utriuſq;* ℥ ß. *cum decocto gallarum, corticum, nucum, fiat maſſa, addendo olei chamem.* ℥ ii. ℞. *lytharg. auri,* ℥ ii. *ciner clavellat.* ℥ i ß. *calcis viv.* ℥ i. *diſſolve omnia cum urina hominis donec acquirant conſiſtentiam unguenti pro unctione capillorum.* ℞. *calcis lotæ,* ℥. ii. *cum decoct. ſalv. et cort. granat. fiat paſta ad formam pultis ſatis liquidæ:* let the hair at bed-time bee died herewith, and waſhed in the morning with wine and water.

How to waſh lime. Now the manner of waſhing lime is thus: Infuſe in ten or twelv pints of fair water one pound of lime, then pour out the water by ſtooping the veſſel, putting more in the ſtead thereof; the third time in ſtead of common water pour thereon the water of the decoction of ſage and galls, let the lime lie therein for ſo manie hours, then in like manner pour it off by ſtooping the veſſel; and thus you ſhall have your lime well waſhed. There is alſo found a way how to die or black the hair by onely powring of ſom liquor thereon: as, ℞. *argenti puriſsimi,* ℥ ii, *reducantur in tenuiſſimas laminas, ponantur in ampulla vitrea cum* ℥ ii. *aquæ ſeparationis auri et argenti,* A water to black the hair. *et aquæ roſar.* ℥ vi. The preparing of this water is thus, put into a viol the water of ſeparation and the ſilver, and ſet it upon hot coals ſo to diſſolv the ſilver, which beeing don then take it from the fire, and when it is cold, add thereto the roſe-water But if you would black it more deeply, add more ſilver thereto, if leſs, then a ſmaller quantitie; to uſe it, you muſt ſteep the comb wherewith you comb your head in this water.

℞. *plumbi uſti,* ℥ ii. *gallarum non perforat. cortic. nucum, an.* ℥ iii. *terræ ſigil ferret. biſpan. an.* ℥ ii. *vitriol. rom.* ℥ vi. *ſalis gem.* ℥ i ß. *caryoph. nucis moſch. an.* ℥ i. *ſalis ammon. aloes, an.* ℥ ß. *fiat pulvis ſubtiliſſimus:* let this powder bee macerated in vinegar for three daies ſpace, then diſtil it all in an alembick, the water that com's therefrom is good for the foreſaid uſe. The following medicine is good to make the hairs of a flaxen color. ℞. *flor. geniſt. ſtæchad. et cardamom. an.* ℥ i. *lupinor. conquaſſat. raſur. buxi, corticis citri, rad. gentian. et berber. an.* ℥ i ß. *cum aqua nitri fiat lenta decoctio:* herewith bathe and moiſten the hairs for manie daies.

To make the hair of a flaxen color.

## CHAP. XLII.

### *Of* Pſilothra, *or Depilatories: and alſo of ſweet-waters.*

A depilatorie. MEdicines to fetch off hair, which by the Greeks are termed *Pſilothra*, and *Depilatoria* in latine vulgarly, are made as you may learn by theſe following examples. ℞. *calcis vivæ,* ℥ iii. *auripigmenti,* ℥ i. let the lime bee quench'd in fair water, and then the orpiment added with ſom aromatic thing: have a care that the medicine lie not too long upon the part, otherwiſe it will burn; and this medicine muſt bee made to the conſiſtence of a pultis and applied warm, firſt fomenting the part with warm water; for then the hair will fall off by gentle rubbing or waſhing it with warm water: but if there happen anie excoriation thereupon, you may help it by the uſe of *unguentum roſatum*, or ſom other of the like facultie.

Another. ℞. *calcis viv. aurip. citrin. an.* ℥ i. *amyl. ſpumæ argent. an.* ℥ ß, *terantur et incorporentur cum aq. com. bulliant ſimul*: you ſhall certainly know that it is ſufficiently boiled, if putting thereinto a gooſes quill, the feathers com preſently of: ſom make into powder equal parts of unquench'd. lime and orpiment, they tie them up in a cloth, with which beeing ſteeped in water they beſmear the part, and within a while after by gently ſtroaking the head, the hairs fal's away of it ſelf

Sweet-waters. The following waters are verie fitting for to waſh the hands, face, and whole bodie, as alſo linnen, becauſ they yield a grateful ſmel: the firſt is lavander-water thus to bee made. ℞. *flor. la-*

Lavender-water. *vend.* ℔ iv. *aq. roſar. & vini alb. an.* ℔ ii. *aq. vitæ,* ℥ iv. *miſceantur omnia ſimul, & fiat diſtillatio in balneo Mariæ:* the ſame water may alſo bee had without diſtillation, if you put ſom lavander-flowers in fair water, and ſo ſet them to ſun in a glaſs, or put them in *balneo*, adding a little oil of ſpike

Clove-water. and musk. Clove-water is thus made. ℞. *caryoph.* ℥ ii *aq. roſar.* ℔ ii. *macerentur ſpatio* xxiv *horarum, et*

Sweet-water. *diſtillentur in balneo Mariæ.* Sweet-water commonly ſo called, is made of divers odoriferous things put together; as thus, ℞. *menthæ, majoranæ, hyſſopi, ſalviæ, roriſmarini, lavendulæ, an.* m ii. *radicis ireos,* ℥ ii. *caryophyllorum, cinamoni, nucis moſchatæ, ana,* ℥ ß. *limonum,* nu. iv. *macerentur omnia in aqua roſarum, ſpacio viginti quatuor horarum, diſtillentur in balneo Mariæ, addendo Moſchi,* ℈ ß.

*The end of the Twentie ſixth Book.*

# *Of* DISTILLATIONS.

## The Twentie ſeventh Book.

### CHAP. I.

*What Diſtillation is, and how manie kindes thereof there bee.*

HAving finiſh'd the Treatiſe of the faculties of medicines, it now ſeem's requiſite that wee ſpeak ſomwhat of Chymiſtrie and ſuch medicines as are extracted by fire. Theſe are ſuch as conſiſt of a certain fift eſſence ſeparated from their earthie impuritie by Diſtillation, in which there is a ſingular, and almoſt divine efficacie in the cure of diſeaſes. So that of ſo great an abundance of the medicines there is ſcarce anie which at this daie Chymiſts do not diſtil, or otherwiſe make them more ſtrong and effectual then they were before. Now diſtillation is a certain Art or way by which the liquor or humid part of things, by the virtue and force of fire or ſom ſemblable heat (as the matter ſhall ſeem to require) is extracted and drawn, beeing firſt reſolved into vapor and then condens'd again by cold. Som call this art *Sublimation* or ſubliming, which ſignifie's nothing elſ, but to ſeparate the pure from the unpure; the parts that are more ſubtil and delicate from thoſe that are more corpulent, groſs and excrementious; as alſo to make thoſe matters whoſe ſubſtance is more groſs, to becom more pure and ſincere, either for that the terreſtrial parts are ill-united and conjoined, or otherwiſe confuſed into the whole and diſperſed by the heat and ſo carried up; the other groſſer parts remaining together in the bottom of the veſſel. Or a diſtillation is the extraction or effuſion of moiſture diſtilling drop by drop, from the noſe of the Alembeck or anie ſuch like veſſels Before this effuſion or falling down of the liquor there goe's a certain concoction performed by the virtue of heat, which ſeparate's the ſubſtances of one kinde from thoſe of another that were confuſedly mixed together in one bodie, and ſo bring's them into one certain form or bodie, which may bee good and profitable for divers diſeaſes. Som things require the heat of a clear fire, others a flame; others the heat of the Sun; others of aſhes, or ſand, or the filings of Iron; others horſ-dung, or boiling water, or the oilie vapor or ſteam thereof. In all theſe kinds of fires, there are four conſiderable degrees of heat. The firſt is conteined in the limits of warmth, and ſuch is warm water, or the vapor of hot water. The ſecond is a little hotter, but yet ſo as the hand may abide it, without anie harm, ſuch is the heat of Aſhes. The third exceed's the vehemencie of the ſecond, wherefore the hand cannot long endure this without hurt, and ſuch is the heat of ſand. The fourth is ſo violent, that it burneth anie thing that commeth near, and ſuch are the filings of Iron.

What diſtillation is.

Four degrees of heat.

The firſt degree is moſt convenient to diſtil ſuch things as are ſubtil and moiſt as flowers. The ſecond ſuch as are ſubtil and drie as thoſe things which are odoriferous and aromatical, as Cinnamom, Ginger, Cloves. The third is fitteſt to diſtil ſuch things as are of a more denſe ſubſtance and fuller of juice; ſuch as are ſom Roots, and gums. The fourth is fit for metals and minerals, as Allum, Vitriol, Amber, Jet, *&c.* In like manner you may diſtil without heat; as wee uſe to do in thoſe things which are diſtilled by ſtraining, as when the more pure is drawn aud ſeparated from that which is moſt unpure and earthie, as wee do in *Lac Virginale*, and other things which are ſtrained through an hypocras-bag, or with a piece of cloth cut in form of a tongue, or by ſettling, or by a veſſel made of Ivie wood: ſomtimes alſo ſomthings may bee diſtilled, by coldneſs and humiditie, and ſo wee make the oil of Tartar, Myrrh and Vitriols, by laying them upon a marble in a cold and moiſt place.

What heat fitteſt for what things.

### CHAP. II.

*Of the matter and form of Fornaces.*

THe matter and form of Fornaces uſe's to bee divers. For ſom Fornaces uſe to bee made of bricks and claie, otherſom of claie onely, which are the better and more laſting, if ſo bee the claie bee fat and well tempered with whites of Eggs and hair. Yet in ſudden occaſions when there is preſent neceſſitie of diſtillation, Fornaces may bee made of bricks, ſo laid together that the joints may not agree, but bee unequal; for ſo the ſtructure will bee the ſtronger. The beſt and fitteſt form of a Fornace for diſtillation is round; for ſo the heat of the fire carried up equally diffuſe's it ſelf everie waie, which happen's not in a Fornace of another figure, as ſquare or triangular, for the corners diſperſ and ſeparate the force of the fire. Their magnitude muſt bee ſuch as ſhall bee fit for the receiving of the veſſel. For their thickneſs; ſo great; as neceſſitie ſhall ſeem to requir. They muſt bee made with two bottoms, diſtinguiſh'd as it were into two forges; one below which may receiv the aſhes of the coals or the like other fuel,

The matter the beſt for Fornaces.

A round form the beſt for Fornaces.

fuel, the other above to contein the burning coals or fire. The bottom of this upper must either be an iron-grate, or elſ it muſt bee perforated with manie holes, that ſo the aſhes may the more eaſily fall down into the bottom, which otherwiſe would extinguiſh the fire; yet ſom Fornaces have three partitions, as the Fornace for reverberation. In the firſt and loweſt the aſhes are received, in the ſecond the coals are put, and in the third the matter which is calcin'd or elſ diſtilled. The third ought to have a ſemicircular cover, that ſo the heat or flame may bee reflected upon the conteined matter. The lower partition ſhall have one or more doors, by which the fallen-down aſhes may bee taken forth. But the upper muſt have but one, whereby the coals or wood may bee put in. But in the top or upper part of the Fornace where it ſhall ſeem moſt fit, there ſhall bee two or three holes made, that by them you may blow the fire, and that the ſmoak may more freely paſs out. But theſe fore-mentioned doors muſt have their ſhutters, much like an oven's mouth. But in defect of a fornace or fit matter to build one withall, wee may uſe a kettle, ſet upon a treefoot, after the manner that wee ſhall preſently declare, when wee com to ſpeak of that diſtillation which is to bee made by *Balneum Mariæ*.

## CHAP. III.

### *Of veſſels fit for Diſtillation.*

VEſſels for Diſtillation conſiſt of different matter and form, for they are either of Lead, Tin, or Braſs; or elſ earthen veſſels and theſe are ſomtimes leaded, ſomtimes not: or elſ they are of Gold, Silver, or Glaſs. Now for leaden veſſels they are worſ then the reſt, and utterly to bee refuſed, eſpecially when as the liquors which are drawn by them are to bee taken into the bodie by the mouth, by reaſon of the malignant qualities which are ſaid to bee in Lead; by which occaſion *Galen* condemn's thoſe waters which run, and are conteined in leaden pipes, which by reaſon of their ſaltiſhneſs and acrimonie which ſavor's of quickſilver, they cauſ dyſenteries. Therefore you may perceiv ſuch waters as are diſtilled through a leaden head to bee indued with a more acrid and violentp-iercing vapor, by reaſon the portion of that ſaltiſhneſs diſſolved in them, and as it were ſhaved from the Alembeck or head, defile's the diſtilled liquors, and whiten's and turn's them into a milkie ſubſtance: but copper or braſs-heads are more hurtful then Lead, for they make the waters that com through them to ſavor or participate of braſs. Thoſe that are of gold and ſilver are leſs hurtful; but the greatneſs of the coſt hinder's us from making heads of ſuch metals; therefore wee muſt have a care that our veſſels for diſtillation bee either of potters-metal leaded, or elſ of braſs, or of that jug metal which is commonly called *terra betovacenſis*, and theſe rather then of lead or anie other metal. Verily glaſſes are thought the beſt; and next to them earthen veſſels leaded, then of jug-metal, and laſtly theſe of tin. There is great varietie of veſſels for diſtillation in form and figure; for ſom are of an oval or cylindrical figure, that is, of a round and longiſh; others are twined and crooked, others of other ſhapes, as you may ſee in the beaks of the Chimiſts. Of this almoſt infinite varietie of figures I will in fit place give you the delineation and uſe of ſuch as ſhall ſeem to bee moſt neceſſarie.

Leaden veſſels ill.

Braſs worſ.

The beſt veſſels for diſtillation.

## CHAP. IIII.

### *What things are to bee conſidered in diſtillation.*

FIrſt make choiſ of a fit place in your houſ for the fornace, ſo that it may neither hinder anie thing, nor bee in danger of the falling of anie thing that ſhall lie over it. When you ſhall diſtil anie thing of a malign or venenate qualitie, yee ſhall ſtand by it as little as you may, leſt the vapor ſhould do you anie harm: when you provide glaſs-veſſels for diſtillation, make choiſ of ſuch, as are exquiſitely baked, without flaws or cracks, and ſuch as are everie where ſmooth. Let not the fire at firſt bee verie violent, not onely for fear of breaking the veſſels, but alſo for that the firſt fire in diſtillation muſt bee gentle, and ſo increaſed by little and little. The things to bee diſtilled, ought not to bee put in too great quantitie into the bodie of the Still, leſt they ſhould riſe up or flie over. Hot things that they may bee more effectual muſt bee twice or thriſe diſtilled, by powring upon them their own diſtilled water or other freſh materials, or elſ by diſtilling them ſeverally and by themſelvs: of this kinde are gums, wax, fats, or oils.

Hot things muſt bee often diſtilled.

But in each other repeated diſtillations you muſt ſomthing leſſen the force of the fire, for the matter attenuated by the former diſtillation cannot afterward endure ſo great heat: but aromatick things, as Cloves, Cinnamom, *&c.* as alſo the chimical oils of Sage, Roſemarie, Tyme, *&c.* ought not to bee diſtilled or rectified over again, for that wee muſt preſently after the firſt diſtillation have a diligent care to ſeparate them from the phlegm, that is, the more watrie ſubſtance of the whole liquor, to which purpoſe wee muſt have regard to that which is diſtilled, for there are ſom things which ſend over their phlegm as Vineger; others, wherein it com's laſt, as * *aqua vitæ*.

* By *aqua vitæ* in this and moſt other places is meant nothing but the ſpirit of wine.

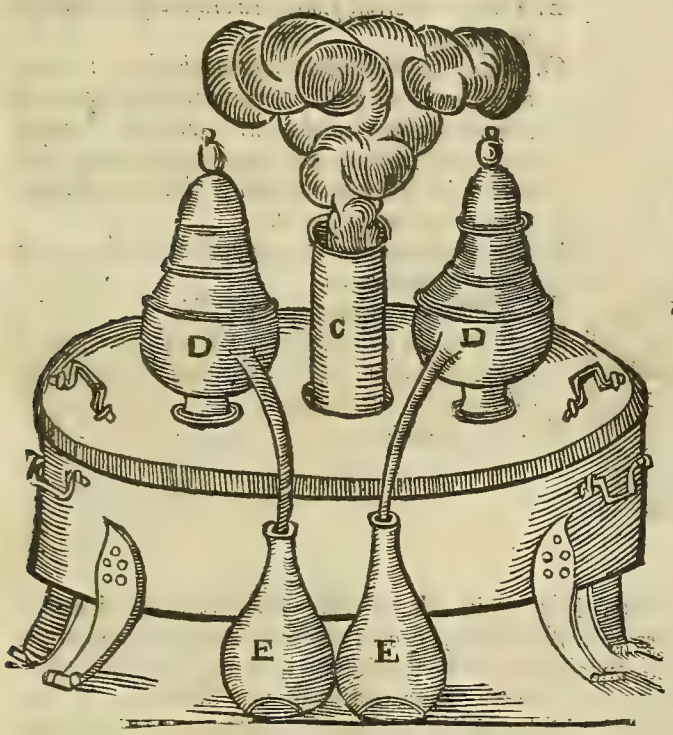
If you would give to things to bee diſtilled another taſte or ſmell then that which they have naturally, you may mix with them ſom odoriferous thing, as Cinnamom, Camphire, or Musk, or the like, as you pleaſ, and ſo diſtil them together. The diſtilled liquors are drawn by the heat

heat of ashes or sand, savor of and retain a certain *empyreuma*, or smatch of the fire; for the helping of which, you shall put them into glasses close stopt, and so expose them to the sun, and now and then open the glasses that this fierie impression may exhale, and the *phlegmon* bee consumed, if that there shall bee anie. But though in all distillation, there are manie things to bee observed, yet are there two things, chiefly worthie of note. The first is, the matter that is to bee distilled and wrought upon, that is, of what kinde it is, and what the nature thereof may do and suffer. The other is the Fornace, which ought to bee provided of a convenient matter and figure of that which is to bee distilled: for you cannot draw anie thing of anie matter, neither of everie mixture beeing distilled can you rightly exspect oil or water. For mix't bodies do not consist of an equal portion of the four Elements, but som are more aierie, others more fierie, som participate more of the water, others more of the earth, and that presently from their first original. Therefore as watrie things yield more water; so aierie and fierie things yield more oil when they are distilled; neither are all instruments fit for the extracting of everie liquor. Moreover you must note, that the waterie liquor somtimes com's forth in the first place, and presently after by the help of a stronger fire follow's the oilie, which wee finde happen's as often as the plant or parts of the plants, which are distilled, are of a cold temperament; for in hot things it happen's otherwise, for the first liquor which com's forth is oilie, and the following watrish.

## CHAP. V. *Of what fashion the vessels for the distilling of waters ought to bee.*

FOr the distilling of anie kinde of waters, two kinde of vessels are necessarie, which are comprehended under this one generall name of an Alembick. They call one of them the bodie, or conteining vessel, the other the head, that is, the cap or top wherein the ascending vapors are condensated or turned into water. It is called the head, because it stand's over the bodie, like as an head; from the head there com's out a pipe or nose whereby the distilled liquor flow's drop by drop into the receiver, as you may see by the figure. The parts of an Alembick.

*The Fornace for a* Balneum Mariæ *with the Alembeck, and their receivers.*

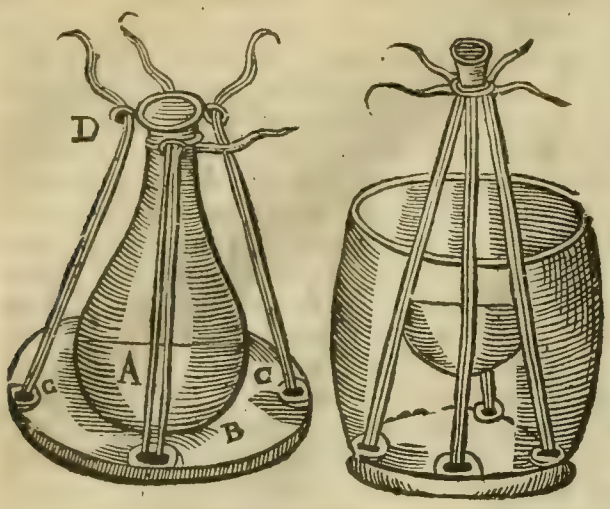



A. *Shew's a brass kettle full of water.*
B. *The cover of the kettle perforated in two places to give passage forth to the vessels.*
C. *A pipe or Chimnie added to the kettle, wherein the fire is conteined to heat the water.*
D. *The Alembick consisting of his bodie and head.*
E. *The receiver whereinto the distilled liquor run's.*

*The effigies of another* balneum Mariæ, *not so easily to bee remooved as the former.*

A. *Shew's the vessel or Copper that contein's the water.*
B. *The Alembick set in water.*

But lest the bottom of the Alembick beeing half full, should float up and down in the water, and so stick against the sides of the Kettle; I have thought good to shew you the waie and means to prevent that danger.




A. *Shew's the vessel or glass-Alembick.*
B. *A plate of lead whereon it stand's.*
C. *Strings that binde the Alembick to the plate.*
D. *Rings through which the strings are put to fasten the Alembick.*

You may distil the liquors of things by the vapor or stream of boiling water, if so bee that you bee provided of Vessels and forms made after this following manner,

*A Fornace with his vessels to distil liquors with the steam of boiling water.*

A. *Shew's the head of the Alembick.*
B. *The bodie thereof, placed in a brass-vessel made for that purpose.*
C. *A brass-vessel perforated in manie places to receiv the vapor of the water. This vessel shall contein the Alembick compassed about with saw-dust, not onely that it may the better and longer retein the heat of the vapor, but also lest it should bee broken by the hard touch of the brasen vessel.*
D. *Shew's the brass vessel containing the water as it is plac'd in the Fornace.*
E. *The Fornace, conteining the vessel.*
F. *A Funnel by which you may now and then pour in water, in stead of that which is vanish'd and dissipated by the heat of the fire.*
G. *The Receiver.*

Why those things that are distilled in *Balneo* retein more of the strength of things.

Now for the faculties of distilled waters it is certain, that those which are drawn in *balneo Mariæ* or a double vessel, are far better and efficacious, becaus they do not onely retein the smell of the things which are distilled, but also the taste, as aciditie, harshnes, sweetnes, bitternes, and other qualities, so that they will neither savor of smoak nor burning; for the milde and gentle heat of a bath contein's by his humiditie, the more subtil parts of the plants that are distilled, that they may not bee dissipated and exhaled, contrarie to which it usually happen's in things which are distilled by the burning heat of wood or coals. For these have a certain nitrous and acrid taste, savoring of the smoak of fire. Besides, they acquire a malign qualitie from the vessels out of which they are distilled, especially if they bee of Lead, whence they contract qualities hurtful to the principal, vital, and natural parts.

Therefore the plants which are thus distilled, if they bee bitter by nature, presently becom insipid, as you may perceiv by wormwood-water thus distilled. Those things which are distilled in *Balneo Mariæ* are contained in a glass-vessel, from which they can borrow no malign qualitie. Therefore the waters so drawn are more effectual and pleasing in taste, smel, and sight. You may draw waters not onely from one kinde of plant, but also from manie compounded and mixed together: of these som are alimentarie, others medicinal, yea and purging; others acquir'd for smell, others for washing or smoothing of women's faces, as wee shall shew hereafter.

## CHAP. VI.

*How the materials must bee prepared before Distillation.*

THings before they bee put into the Alembick must undergo a preparation, that is, they must bee cut small, beaten and macerated, that is, steeped in som liquor, that so they may bee the more easily distilled and yield the more water, and retein their native smell and

and faculties; yet such preparation is not convenient for all things; for there bee som things, which need no infusion or maceration, but must rather bee dried before they bee distilled, as Sage, Tyme, Rosemarie, and the like, by reason of their too much humiditie; it will bee sufficient to sprinkle other things with som liquor onely. In this preparation there are two things observable, to wit, the time of the infusion, and condition of the liquor wherein these things ought to bee infused. The time of the infusion is different according to the varietie of the matter to bee macerated; for things that are hard, solid, drie or whole, must bee longer macerated, then such as are tender, freshly gathered or beaten: whence it is that roots and seeds require a longer time of infusion; flowers and leavs a shorter, and the like of other things. The liquors wherein infusion must bee made, ought to bee agreeable to the things infused. For hot ingredients require hot liquors, and cold such as are cold wherein they may bee infused.

What things need not to bee macerated before they bee dissolved.

Such things as have not much juice, as Betonie, wormwood and the like, or which are verie odoriferous, as all aromatick things, would bee infused in wine; so to preserv their smell, which otherwise by the force of the fire, by reason of the tenuitie of the substance easily vanishe's. But if wee desire that the distilled liquor should more exactly retein and have the facultie of the things whereof it is distilled, then must you infuse it in the juice thereof, or som such appropriate liquor, that it may swim in it whilest it is distilled, or at least let it bee sprinkled therewith.

The maceration of plants in their own juice.

## CHAP. VII.

### *Of the Art of distilling of waters.*

The varieties of stilled waters.

BEfore I describe the manner how to distil waters, I think it not amiss briefly to reckon up how manie sorts of distilled waters there bee, and what the faculties of them are. Therefore of distilled waters som are medicinal, as the waters of Roses, Plantain, Sorrel, Sage, and the like: others are alimentarie, as those waters that wee call restauratives; othersom are composed of both, such as are these restaurative waters which are also mixed with medicinal things; others are purging, as the distilled water of green and fresh Rubarb; othersom serv for smoothing the skin, and others for smell; of which sort are those that are distilled of aromatick things.

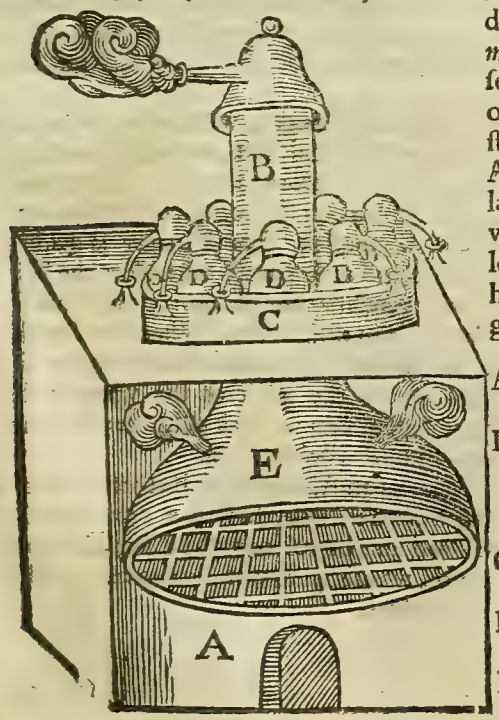
Rose-water.

To distil Rose-water, it will bee good to macerate the Roses before you distil them for the space of two or three daies, in som formerly distilled Rose-water, or their pressed-out juice, luting the vessel close; then put them into an Alembic closely luted to his head and his Receiver, and so put into a *Balneum Mariæ*, as wee have formerly described.

Restauratives.

The distilled Alimentarie liquors are nothing elf than those that wee vulgarly call Restauratives; this is the manner and art of preparing them. Take of Veal, Mutton, Kid, Capon, Pullet, Cock, Patridg, Phesant, as much as shall seem fit for your purpose: cut it small, and lest it should require heat, or *empyreuma* from the fire, mix therewith a handful of French-Barlie, and of red Rose-leavs drie and fresh, but first steeped in the juice of Pomgranats, or citrons and Rosewater with a little Cinnamom, as much.

*The delineation of a* Balneum Mariæ, *which may also serv for to distil with ashes.*




But if you desire that this restaurative should not onely bee alimentarie, but also medicinal, you shall add thereto such things as shall resist the diseas, such as are Cordial powders as of *El. Diamargarit. frigid. De gemmis, Aromaticum Rosat.* Conserv of Bugloss, Borrage, roots, herbs, seeds and other things of that kinde. But if it bee in a pestiferous season, Triacle, Mithridate and other Antidotes shall bee added; each of these shall bee laid in ranks or orders one over another, which is vulgarly termed *stratum super stratum*, in a glas Alembick, and distilled in *balneo Mariæ* with the heat of Ashes, or elf of warm sand, as the figure shew's.

A. *Shew's the Fornace with the hole to take forth the the Ashes.*

B. *Shew's another Fornace, as it were set in the other: now it is of Brass, and run's through the midst of the kettle made also of brass, that so the conteined water or ashes may bee the more easily heated.*

C. *The kettle wherein the water, ashes, or sand are conteined.*

D. *The Alembick set in the water, ashes, or sand, with the mouths of the receivers.*

E. *The bottom of the second brass Fornace, whose top is marked with* B. *which contein's the fire.*

Another waie of making restaurative Liquors.

There may bee made other restauratives in shorter time with less labor and cost. To this purpose the flesh must bee beaten and cut thin, and so thrust through with a double thred, so that the pieces thereof may touch each other; then put them into a glass, and let the thred hang out; so stop up the glass close with a linnen cloth, Cotten or Tow, and lute it up with paste made of meal and the whites of eggs; then set it up to the neck in a kettle of water, but so that it touch not the bottom, but let it bee kept upright by the formerly-described means; then make a gentle fire there-under, until the conteined flesh by long boiling shall bee dissolved into juice, and that will commonly bee in som four hours space. This beeing don, let the fire bee taken from under the kettle, but take not forth the glass before the water bee cold, lest it beeing hot should bee broken by the sudden appulf of the cold air. Wherefore when as it is cold, let it bee opened, and the thred with the pieces of flesh bee drawn forth, so that onely the juice may bee left remaining; then strain it through a bag, and aromatize it with Sugar and Cinnamom, adding a little juice of Citron, Verjuice or Vineger, as it shall best like the patient's palate.

After this manner you may quickly, easily, and without great cost have and prepare all sorts of restauratives aswell medicated as simple. But the force and facultie of purging medicines is extracted after a clean contrarie manner then the oils and waters which are drawn of Aromatick things, as Sage, Rosemarie, Tyme, Aniseeds, Fennel, Cloves, Cinnamom, Nutmegs, and the like. For the strength of these, as that which is subtil and aierie, flie's upwards in distillation; but the strength of purging things, as Turbith, Agarick Rubarb and the like, subside in the bottom. For the purgative facultie of these purgers inseparably adhere's to the bodies and substances.

Now for sweet waters and such as serv to smooth the skin of the face, they may bee distilled in *Balneo Mariæ* like as Rose-water.

## CHAP. VIII.

### *How to distil Aqua vitæ or the spirits of Wine.*

Take of good White or Claret-wine or Sack which is not sowr nor mustie, nor otherwise corrupt, or of the Lees, that quantitie which may serv to fil the vessel wherein you make the distillation to a third part; then put on your head furnished with the nose or pipe, and so make your distillation in *Balneo Mariæ*. The oftner it is distilled, or (as they term it) rectified, the more noble and effectual it becom's. Therefore som distil it seven times over.

Spirit of wine seven times rectified.

At the first distillation it may suffice to draw a fourth or third part of the whole; to wit, of twentie four pintes of Wine or Lees, draw six or eight pintes of distilled liquor.

At the second time the half part of that is three or four pintes.

At the third distillation the half part again, that is, two pints; so that the oftner you distil it over, the less liquor you have, but it will bee a great deal the more efficacious. I do well like that the first distillation bee made in Ashes; the second in *Balneum Mariæ*. To conclude, that *aqua vitæ* is to bee approoved of, neither is it anie oftner to bee distilled, which put into a spoon or saucer, and there set on fire, burn's wholly away and leav's no liquor, or moisture in the bottom of the vessel; if you drop a drop of oil into this same water, it continually sal's to the bottom; or if you drop a drop into the palm of your hand, it will quickly vanish away, which are two other notes of the probation of this liquor.

The faculties of the spirit of wine.

The faculties and effects of *aqua vitæ* are innumerable, it is good against the epilepsie and all cold diseases, it asswage's the pains of the teeth, it is good for punctures and wounds of the Nervs, faintings, swoonings, gangreens and mortification, both of it's flesh, as also put to other medicines for a vehicle.

There is this difference between the distilling of wine and Vineger, wine beeing of an aierie and vaporous substance, that which is the best and most effectual in it, to wit, the aierie and fierie liquor, com's from it presently at the first distillation. Therefore the residue that remain's in the bottom of the vessel, is of a cold drie and acrid nature; on the contrarie, the water that com's first from Vineger beeing distilled is insipid and flegmatick. For Vineger is made by the corruption of wine, and the segregation of the fierie and aerie parts; wherefore the Wine becoming sowr, there remain's nothing of the former substance but phlegm; wherefore seeing phlegm is chiefly predominant in Vineger, it first rise's in distillation. Wherefore hee that hope's to distil the spirit of Vineger, hee must cast away the phlegmatick substance, that first substance that first rise's, and when by his taste hee shall perceiv the spirit of the Vineger, hee shall keep the fire there-under, until the flowing liquor shall becom as thick as honie; then must the fire bee taken away, otherwise the burning of it will cause a great stinch.

The distilling of Wine and Vineger is different.

The vessels fit to distil *aqua vitæ* and Vineger are divers, as an Alembick or Retort set in sand or Ashes; a Copper or brass-bottom of a Stil, with a head thereto, having a pipe comming forth thereof which run's into a worm, or pipe fast'ned in a barrel or vessel filled with cold-water, and having the lower end comming forth thereof, whose figure wee shall give you when as wee com to speak of the drawing of oils out of vegetables.

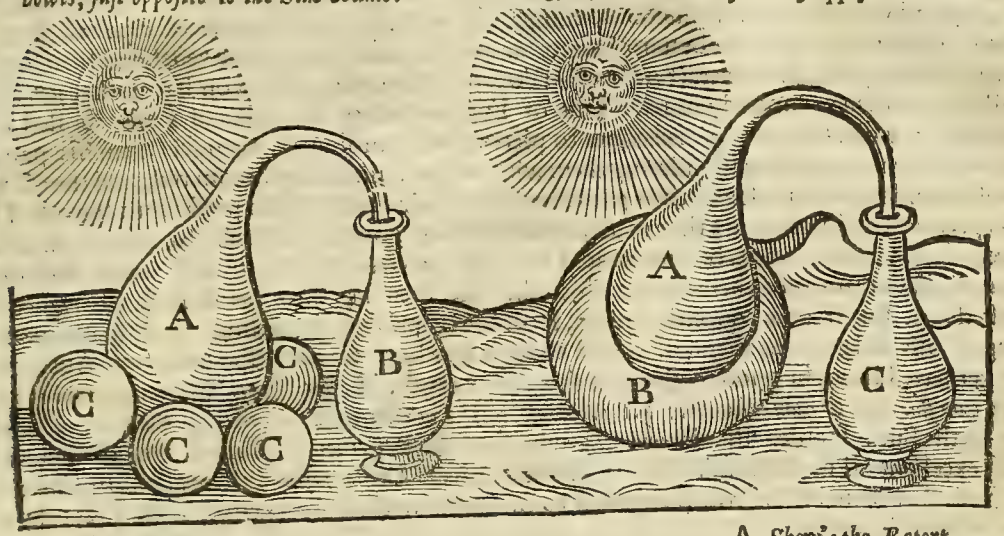
CHA.

## CHAP. IX.

*Of the manner of rectifying, that is, how to increas the strength of waters, that have been once distilled.*

TO rectifie the waters that have been distilled in *Balneo Mariæ*, you must set them in the Sun in glasses well stopped and half filled, beeing set in sand to the third part of their height, that the water waxing hot by the heat of the Sun may separate it self from the phlegm mixed therewith, which will bee performed in 12. or 15. daies. There is another better waie to do this, which is to distil them again in *Balneo* with a gentle fire, or if you will put them into a Retort furnished with his receiver, and set them upon chrystal or iron-bowls, or in an iron-mortar directly opposite to the beams of the Sun, as you may learn by these ensuing signs. The first waie. The second.

*A Retort with his receiver standing upon Chrystal-bowls, just opposite to the Sun-beams.*




A. *Shew's the Retort.*
B. *The receiver.*
C. *The Crystal bowls.*

*Another Retort with his receiver standing in a Marble or Iron-mortar, directly opposite to the Sun.*




A. *Shew's the Retort.*
B. *The marble, or Iron-mortar.*
C. *The receiver.*

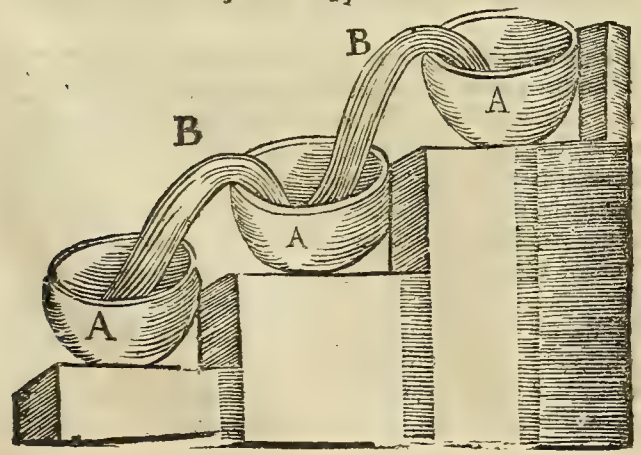
## CHAP. X.

*Of distillation by filtring.*

YOu shall set three basins or vessels of convenient matter in that site and order that each may bee higher than other; that which stand's in the highest place, shall contein the liquor to bee distilled, and that which stand's lowest shall receiv the distilled liquor. Out of the first and second vessel shall hang shreds or pieces of cloth or cotten, with their broader ends in the liquor or upper vessel; and the other sharper ends hanging down, whereby the more subtil and defecate liquor may fall down by drops into the vessel that stand's under it, but the grosser and more feculent part may subside in the first and second vessel. You by this means may at the same time distil the same liquor divers times, if you place manie vessels one under another after the fore-mentioned manner, and so put shreds into each of them, so that the lowest vessel may receiv the purified liquor. In stead of this distillation Apothecaries oft-times use bags.

This manner of distillation was invented to make more clear and pure waters, and all juices and compositions, which are of such a liquid consistence. You may take an example from *Lac. virginis*, or Virgin's-milk, of which this is the description. *Lac Virginis.*

*The description of vessels to perform the distillation or filtration by shreds.*




A. *Shew's the vessel.*
B. *The Cloths or shreds.*

℞. *litharg. auri diligenter pulveri ſ. ℥iii. macerentur in aceti boni ℥vi. trium horarum ſpatio, ſeorſim etiam in aqua plantaginis, ſolani, roſarum, aut communi ſal infundatur*; then distil them both by shreds, then mix the distilled liquors, and you shall have that which for the milkie whiteness is termed Virgin's milk, beeing good against the redness and pimples of the face, as wee have noted in our Antidotarie. *Cap. 44. of fuci.*

## CHAP. XI.

*What and how manie waies they are to make oils.*

YOu may by three means especially draw to extract the oils that you desire. The first is by expression, and so are made the oils of Olives, nuts, seeds, fruits and the like. Under this is thought to bee conteined elixation, when as the beaten materials are boiled in water, that so the oil may swim aloft, and by this means are made the oils of the seeds of Elder and danewort, and of Baie-berries. Another is by infusion, as that which is by infusing the parts of plants and other things in oils. The third is by distillation, such is that which is drawn by the heat of the fire, whether by assent or by descent, or by concourse; The first waie is known by all; now it is thus, take almonds in their husks, beat them, work them into a mass, then put them into a bag made of hair, or elf of strong cloth first steeped in water or in white-wine, then put them into press and so extract their oil. You may do the same in pine-apple-kernels, Hazel-nuts, Coco-nuts, nutmegs, peach-kernels, the seeds of gourds and cucumbers, pistick-nuts, and all such oilie things. Oil of baies may bee made of ripe baie-berries newly gathered, let them bee beaten in a mortar and so boiled in a double vessel, and then forthwith put into press, so to extract oil as you do from Almonds, unless you had rather get it by boiling as wee have formerly noted. Oile of Eggs is made of the yelks of Eggs boiled verie hard; when they are so, rub them to pieces with your fingers, then frie them in a pan over a gentle fire, continually stirring them with a spoon until they becom red, and the oil bee resolved and flow from them; then put them into a hair-cloth, and so press forth the oil. The oils prepared by infusion are thus made, make choise of good oil wherein let plants, or creatures, or the parts of them bee macerated for som convenient time, that is, until they may seem to have transfused their faculties into the oil, then let them bee boiled, so strained or pressed out. But if anie aquositie remain, let it bee evaporated by boiling. Som in compounding of oils add gums to them, of which though wee have formerly spoken in our Antidotarie, yet have I thought good to give you this one example. ℞. *flor. hyper.* ℞ ß. *immittantur in phialam cum flo. cent. & gum. elemi, an.* ℥ii. *olei com.* ℔ ii. Let them bee exposed all the heat of Summer to the Sun. If anie will add *aqua vitæ* wherein som Benzoin is dissolved, hee shall have a most excellent oil in this kind. Oil of Mastich is made *Ex olei rosati* ℥xii. *mastich.* ℥iii. *vini optimi* ℥viii. Let them all bee boiled together to the consumption of the wine, then strain the oil and reserv it in a vessel.

Oils by expression.

By infusion.

By distillation.

Oil of Baie-berries.

Of Eggs.

Oil of S. *John's-mat.*

## CHAP. XII.

*Of extracting of Oils of vegetables by Distillation.*

ALmost all herbs that carrie their flowers and seeds in an umble, have seeds of a hot, subtil and aierie substance, and consequently oilie. Now becaus the oilie substance that is conteined in simple bodies is of two kindes, therefore the manner also of extracting is twofold. For som is gross, earthie, viscous, and wholly confused and mixt with the bodies out of which they ought to bee drawn, as that which wee have said is usually extracted by expression; this becaus it most tenaciously adhere's to the grosser substance, and part of the bodie, therefore it cannot by reason of this natural grossness, bee lifted up, or ascend. Othersom are of a slender and aierie substance, which is easily severed from their bodie, wherefore beeing put to distillation it easily rise's: such is the onely substance of aromatick things, as of Juniper, Aniseeds, Cloves, Nutmegs, Cinnamom, Pepper, Ginger, and the like odoriferous and spicie things. This is the manner of extracting oils out of them; let your matter bee well beaten and infused in water to that proportion, that for everie pound of the material, there may bee ten pints of water; infuse it in a copper-bottom, having a head thereto either tinned or silvered over, and furnished with a couller filled with cold-water. Set your vessel upon a fornace having a fire in it, or elf in sand, or ashes. When as the water conteined in the head shall wax hot, you must draw it forth, and put in cold, that so the spirits may the better bee condensed, and may not flie away: you shall put a long-neck't receiver to the nose of the Alembick, and you shall increas the fire, until the things contained in the Alembick boil.

What oils are to bee drawn by expression.

The first manner of drawing oils by distillation.

There is another manner of performing this distillation, the matter preserved and infused as wee have formerly declared, shall bee put in a brass or copper-bottom covered with his head, to which shall bee fitted or well luted, a worm of Tin, this worm wall run through a barrel filled with cold-water, that the liquor which flow's forth with the oil, may bee cooled in the passage forth; at the lower end of this worm you shall set your Receiver. The fire gentle at the first, shall bee increased by little and little, until the conteined matter, as wee formerly said do boil; but take heed that you make not too quick or vehement a fire, for so the matter swelling up by boiling may exceed the bounds of the conteining vessel, and so violently flie over.

Another waie.

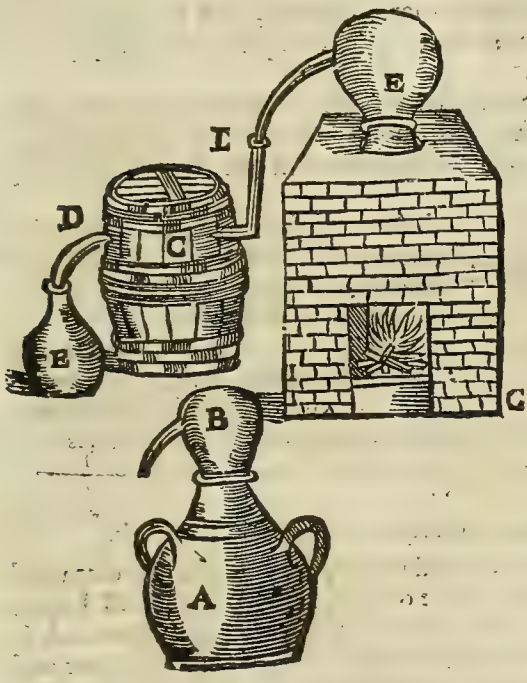
Observing these things, you shall presently at the verie first see an oilie moisture flowing forth together with the watrish. When the oil hath don owing which you may know by the color of the distilled liquor, as also by the consistence and taste, then put out the fire; and you may separate the oil from the water by a little vessel made like a Thimble and tied to the end of a stick; [or, which is better, with a glass-funnel, or instrument made of glass for

the

the same purpose.] Here you must also note that there bee som oils that swim upon the top of the water; as oil of aniseeds; othersom on the contrarie, which fall to the bottom; as oil of Cinnamom, Mace, and Cloves. What oils fa to the bottom

Moreover you must note, that the watrish moisture, or water that is distilled with oil of Aniseed and Cinnamom, is whitish, and in succes of time, will in som small proportion turn into oil. Also these waters must bee kept several, for they are far more excellent then those that are distilled by *Balneum Mariæ*, especially those that first com forth together with the oil. Oils are of the same faculties with the bodies from whence they are extracted, but much more effectual; for the force which formerly was diffused in manie pounds of this, or that medicine, is after distillation contracted into a few drams. For example, the facultie that was dispersed over i. pound of Cloves, will bee contracted into two ounces of oil at the most; and that which was in a pound of Cinnamom will bee drawn into ʒiſs. or ʒii. at the most of oil. But to draw the greater quantitie with the lesser charge, and without fear of breaking the vessels, whereto glasses are subject, I like that you distil them in copper-vessels, for you need not fear that the oil which is distilled by them will contract an ill qualitie from the copper, for the watrish moisture that flow's forth together therewith will hinder it, especially if the copper shall bee tinned or silvered over. I have thought good to describe and set before your eyes, the whole manner of this operation.

*A Fornace with set vessels to extract the Chymical oils, or spirits of Sage, Rosemarie, Tyme, Lavander, Aniseeds, Fennel-seeds, Cloves, Nutmegs, Cinnamom, Pepper, Ginger, and the like; as also to distil the spirit of Wine, of Vineger and* Aqua vitæ. *In stead of the barrel and worm, you may use a head with a bucket or rowler about it.*




A. *Shew's the bottom, which ought to bee of Copper and tinned on the in-side.*

B. *The head.*

C. *The Barrel filled with cold water to refrigerate and condensate the water and oil that run through the pipe or worm that is put through it.*

D. *A pipe of brass or lattin, or rather a worm of Tin running through the Barrel.*

E. *The Alembick set in the fornace with the fire under it.*

Now becaus wee have made mention of Cinnamom, Pepper, and other spices which grew not here with us, I have thought good to describe these out of *Thevet's* Cosmographie, hee having seen them growing. Pepper grow's upon shrubs in *India*, these shrubs send forth little branches whereon hang clusters of berries, like to Ivie-berries, or bunches of small black grapes, or currans the leavs are like those of the Citron-tree, but sharpish and pricking. The descriptio on of Pepper.

The *Indians* gather those berries with great diligence, and stow them up in large cellars, as soon as they com to perfect maturitie. Wherefore it oft-times happen's, that there are more then 200. ships upon the coast of the lesser *Iava* an Island of that countrie, to carrie thence Pepper and other spices. Pepper is used in Antidotes against poisons, it provoke's urine, digest's, attract's, resolv's, and cure's the bites of Serpents. It is properly applied and taken inwardly against a cold stomach; in sauces it help's concoction and procure's appetite; you must make choise of such as is black, heavie, and not flaccid. The trees which bear white, and those that bear black pepper, are so like each other, that the natives themselvs know not which is which, unless when they have their fruit hanging upon them, as the like happen's upon our Vines which bear white and black grapes. The uses thereof.

The tree that yeeld's Cinnamom grow's in the mountain's of *India*, and hath leavs verie like to baie-leavs; branches and shoots at certain times of the year are cut from this tree, by the appointment of the King of that Province, the bark of which is that wee term Cinnamom. This is sold to no stranger unless at the King's pleasure and hee setting the price thereof, it is not lawful for others to cut thereof. The Cinnamom tree.

*Galen*

7. *simp.* *Galen* write's that Cinnamom is of verie subtil parts, hot in the third degree, and partaking of som attriction; therefore it cut's and dissolv's the excrements of the bodie, strengthen's the parts, provoke's the courses when as they stop by reason of the admixture of gross humors; it sweeten's the breath, and yeeld's a fine taste and smell to medicines, hippocras, and sauces. Of Cinnamom there is made an excellent water against all cold diseases, & also against swoonings, the plague and poisons. The composition thereof is this. Take of the choisest and best Cinnamom one pound, beat it grosly, and put thereto of Rose-water four pintes, of white-wine half a pinte, beeing thus mixed, put them into a glass and so let them stand in infusion 24. hours, often stirring of them. Then distil them in *Balneo Mariæ*, closely luting the receiver and vessels lest the spirit should flie away.

An excellent Cinnamom-tree.

## CHAP. XIII.

*Another manner how to draw the essence and spirits of herbs, flowers, seeds, and spices; as also of Rubarb, Agarick, Turbith, Hermodactyls, and other Purgers.*

YOu may extract the essences and spirits of the things mentioned in the title of this Chapter, as thus. Take Sugar, Rubarb, Cinnamom, or anie other material you pleas; cut it small, or elf beat it, then put it into a glass with a long neck, and pour thereupon as much *aqua vitæ* as shall bee sufficient to cover the materials or ingredients, and to over-top them som fingers bredth, then stop up the glass verie close that no air enter thereinto; Thus suffer it to infuse for eight daies in *balneo* with a verie gentle heat; for thus the *aqua vitæ* will extract the faculties of the ingredients, which you shall know that it hath don, when as you shall see it perfectly tinctured with the color of the ingredients. The eight daies ended, you shall put this same *aqua vitæ* into another vessel filled with the like quantitie of the same materials prepared after the same manner, that it may also take forth the tincture thereof, and do thus three or four times, untill the *aqua vitæ* bee deeply tinctured with the color of the infused Ingredients.

A sign that the spirit of wine hath fetcht out the strength of the ingredients.

But if the materials from whence you desire to extract this spirit or essence, bee of great price; as *Lignum Aloës*, *Rubarb*, &c. You must not think it sufficient to infuse it once onely, but you must go over it twice, or thrice, until all the efficacie bee exstracted out thereof; you may know that it is all wholly insipid.

A sign that the ingredients have lost their strength.

These things thus don, as is fitting, put all the liquor tinctured and furnished with the color and strength of the ingredients, into an Alembick, fitted and closely luted to it's head, and so put into *Balneum Mariæ*, that so you may extract or draw off the *aqua vitæ*, to keep for the like purpose, and so you shall have the spirit, and essence remaining in the bottom.

Now if you desire to bring this extract to the height of honie, set it in an earthen-pot well leaded, upon hot ashes, so that the thin part thereof may bee evaporated, for thus at length, you shall have a most noble and effectual essence of that thing which you have distilled, whereof one scruple will bee more powerful in purging, then two or three drams of the thing its self.

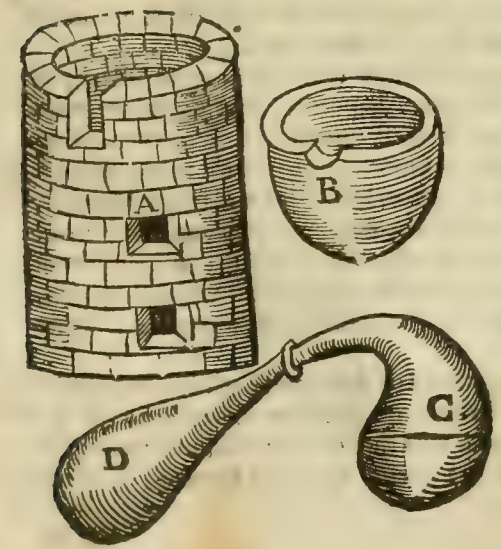
## CHAP. XIV.

*How to extract oil out of Gums, condensed juices, and rosins, as also out of som woods.*

What a Retort is.

ALL oils that are drawn out of gums, oilie-woods and metals, are extracted by that vessel which wee vulgarly term a Retort. It must bee made of glass, or jug's-metal well leaded, and of such bigness as shall bee convenient for the operation you intend, though commonly it should bee made to hold som gallon and an half of water; the neck thereof must bee a foot and a half, or at least a foot long. The receiver is commonly a vial whereinto the neck of the Retort is fitted and inserted. Then the Retort shall bee set in an earthen pan filled with ashes, or sand, and so set into a furnace, as you may see by the following figure.

*The figure of a Furnace, with his earthen-pan and receiver.*




A. *Shew's the fornace.*

B. *The earthen-pan, or vessel to set the Retort in.*

C. *The Retort or Cucurbite.*

D. *The Receiver.*

Of

Of gums, som are liquid, som solid; and of the solid, som are more solid then othersom; those that are solid are more troublesom to distil then the liquid, for they are not so easily dissolved or melted, neither do they yeeld so well to the fire, so that oft-times they are burnt before they bee dissolved; whence it is that som for everie pound of solid gum add two or three pounds of most clear and liquid oil of Turpentine. Besides, liquid things are also hard to bee distilled, becaus when as they com to bee throughly hot at the fire, they swell up so much, that they exceed, or run out of the Retort, and so fall into the Receiver, as they were put into the Retort, especially if so bee that the fire bee too hot at the first. Manie to shun this inconvenience add to the things put into the Retort, som sand, as it were, to balast it withal.

The differences of Gums.

Cautions in distilling of Gums.

Oil of Rosin and Turpentine is thus made; take two or three pounds of Turpentine, and put it into a Retort of such largeness that three parts thereof might remain emptie, and for everie pound of Turpentine add three or four ounces of sand; then place the Retort in an earthen-pan, filled with sifted ashes, and set it upon the fornace as is fit, and to the neck thereof fit and closely lute a Receiver. Lastly, kindle there-under a soft fire at the first, lest the conteined materials should run over; increas this fire by little and little, and take heed that the things becom not too hot on a sudden. At the first, a clear and acid liquor will drop out, wherein a certain sediment use's to concrete; then will flow forth a most clear oil, somwhat resembling the watrie and phlegmatick liquor; then must the fire bee somwhat increased, that the third oilie, clear, thin and verie golden colored liquor may rise and distil; but then also a clearer and more violent fire must bee raised, that so you may extract an oil that will bee red like a carbuncle, and of a consistence indifferently thick. Thus therefore you may extract four kindes of liquors our of Turpentine, and receiv them beeing different in several Receivers; yet I judg it better to receiv them all in one, that so by distilling them again afterwards you may separate your desired oil; now there will ten or twelv ounces of oil flow from an ounce of Turpentine. This kinde of oil is effectual against the Palsie, Convulsions, punctures of the nervs, and wounds of all the nervous parts.

How to make oil of Turpentine

But you shall thus extract oil out of wax; Take one pound of wax, melt it, and put it into a glass-Retort set in sand, or ashes, as wee mentioned a little before in drawing of oil of Turpentine, then distil it, by increasing the fire by degrees. There distil's nothing forth of wax, besides an oilie substance and a little *Phlegma*, yet portion of this oilie substance presently concrete's into a certain butter-like matter, which therefore would bee distilled over again; you may draw ʒvi. or viii. of oil, from one pound of wax.

How to make oil of wax.

This oil is effectual against Contusions, and also verie good against cold affects.

The faculties thereof.

## CHAP. XV.

*Of extracting of Oils out of the harder sorts of Gums; as myrrh, mastich, Frankincens, and the like.*

SOm there bee who extract these kindes of oils with the Retort set in ashes or sand, as wee mentioned in the former Chapter of Oils of more liquid Gums, adding for everie pound of Gum two pintes of *Aqua vitæ*, and two or three ounces of Oil of Turpentine, then let them infuse for eight or ten daies in *Balneo mariæ*, or elsin horse-dung; then set it to distil in a Retort. Now this is the true manner of making of Oils of Myrrh; Take Myrrh made into fine powder, and therewith fill hard Eggs in stead of their yelks beeing taken out; then place the Eggs upon a gridiron, or such like grate in som moist place as a cellar, and set under them a leaden-earthen-pan; the Myrrh will dissolv into an oilie-water, which beeing presently put into a glass and well stopped, with an equal quantitie of rectified *Aqua vitæ*, and so set for three or four months in hot horse-dung, which past the vessel shall bee taken forth, and so stopped that the conteined liquor may bee poured into an Alembick, for there will certain gross settling by this means remain in the bottom, then set your Alembick in *Balneo* and so draw off the *Aqua vitæ* and phlegmatick liquor, and there will remain in the bottom a pure and clear oil, whereto you may give a curious color by mixing therewith som Alkanet, and a smell by dropping thereinto a little oil of Sage, Cinnamom, or Cloves.

How to make oil of myrrh.

How to give it a pleasing color and smell.

Now let us shew the composition and manner of making of balsams by giving you one or two examples; the first of which is taken out of *Vesalius* his Surgerie; and is this.

℞. *terebinth. opt.* ℔i. *ol. laurini* ʒiiii. *gum. elem.* ʒiiiiß. *thuris, myrrhæ, gum. heredæ, centaur. majoris, ligni aloës, an.* ʒiii. *galangæ, caryophyll. consolidæ majoris, Cinnamomi, nucis moschat. zedoariæ, zinzib. dictamni albi, an.* ʒi. *olei vermium terrestrium,* ʒii. *aquæ vitæ* ℔vi.

*Vesalius* his Balsam.

The manner of making it is this; Let all these things bee beaten and made small, and so infused for three daies space in *Aqua vitæ*, then distilled in a Retort just as wee said, you must distil oil of Turpentine and Wax. There will flow hence three sorts of liquors; the first watrish and clear, the other thin, and of pure golden color: the third of the color of a Carbuncle, which is the true Balsam. The first liquor is effectual against the weakness of the stomach comming of a cold cause, for that it cut's phlegm and discusse's flatulencies; the second help's fresh and hot bleeding wounds, as also the palsie. The third is chiefly effectual against these same effects. The composition of the following *Balsamum* is out of *Fallopius*; and is this. ℞. *terebinth. claræ*, ℔ii. *olei de semine lini* ℔i. *resinæ pini,* ʒvii. *thuris, myrrhæ, aloës, masticbes,*

*Fallopius* his Balsam.

*maſtiches, ſarcocollæ, an.* ℥iii. *macis, ligni Aloës, an.* ℥ii. *croci,* ℥ß. Let them all bee put into a glaſs-Retort, ſet in aſhes and ſo diſtilled. Firſt there will com forth a clear water, then preſenly after a reddiſh oil, moſt profitable for wounds.

Now you muſt know that by this means, wee may eaſily diſtil all Axungia's, fats, parts of creatures, woods, all kindes of barks and ſeeds, if ſo bee that they bee firſt macerated as they ought to bee, yet ſo that there will com forth more watrie then oilie humiditie. Now for that wee formerly frequently mentioned *Thus* or Frankincenſ, I have here thought good out of *Thevet's* Coſmographie to give you the deſcription of the tree from which it flow's. The Frankincenſ-tree (ſaith hee) grow's naturally in *Arabia*, reſemble's a Pine, yeelding a moiſture that is preſently hardened, and it concrete's into whitiſh clear grains, fattie within, which caſt into the fire, take flame. Now Frankincenſ is adulerated with Pine-roſin and Gum, which is the cauſ that you ſhall ſeldom finde that with us, as it is here deſcribed; you may finde out the deceit as thus, for that neither Roſin nor anie other Gum take's flame, for Roſin go's away in ſmoak, but Frankincenſ preſently burn's. The ſmell alſo bewraie's the counterfeit, for it yeeld's no grateful ſmell as Frankincenſ doth. The *Arabians* wound the tree that ſo the liquor may the more readily flow forth, whereof they make great gain. It fill's up hollow ulcers and cicatrize's them; wherefore it enter's as a chief ingredient into artificial balſam; Frankincenſ alone made into powder and applied, ſtanche's the blood that flow's out of the wounds.

What Frankincenſ is.

The faculties thereof.

*Mathiolus* ſaith, that it beeing mixed with Fuller's-earth, and oil of Roſes, is a ſingular remedie againſt the inflammation of the breaſts of women lately delivered of childe.

## CHAP. XVI.

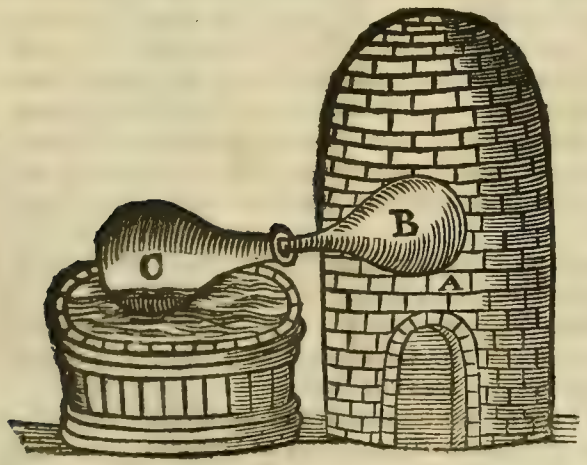
### *The making of oil of Vitriol.*

TAke ten pounds of Vitriol, which beeing made into powder, put it into an earthen-pot, and ſet it upon hot coals, untill it bee calcined, which is when as it becom reddiſh; after ſom five or ſix hours, when as it ſhall bee throughly cold, break the pot, and let the Vitriol bee again made into powder, that ſo it may bee calcined again, and you ſhall do thus ſo often and long until it ſhall bee perfectly calcined, which is when as it ſhall bee exactly red; then let it bee made into powder, and put into an earthen-Retort, like that wherein *aqua fortis* is uſually drawn, adding for everie pound of your calcined Vitriol of tile-ſhreds, or powdered-brick 1 quarter; then put the Retort furniſhed with it's receiver into a Fornace of Reverberation, alwaies keeping a ſtrong fire, and that for the ſpace of 48. hours, more or leſs according to the manner and plentie of the diſtilling liquor. You ſhall know the diſtillation is finiſhed when as the Receiver ſhall begin to recover his native perſpicuitie, beeing not now filled with vaporous ſpirits, wherewith as long as the humor diſtil's it is repleniſhed and look's white.

The ſign of perfectly calcined vitriol.

Now for the Receiver there are two things to bee obſerved. The firſt is, that it bee great and verie capacious, that it may not bee diſtended and broken by the abundant flowing of vaporous ſpirits, as it doth oft-times happen; another thing is, that you ſet it in a veſſel filled with cold water, leſt it ſhould bee broken by beeing over hot; you may eaſily perceiv all this by the enſuing figure.

*A Fornace or Reverberation furniſhed with his Retort and Receiver.*




A. *Shew's the Fornace.*

B. *The Retort.*

C. *The Receiver.*

D. *The veſſel filled with cold water.*

## CHAP. XVII.

*A Table or Catalogue of Medicines and Instruments serving for the cure of Diseases.*

MEdicines, and Medicinal meats fit for the cure of Diseases, are taken from living Creatures, Plants and Minerals. From living creatures are taken,

*Horns. Hoovs. Hairs. Feathers. Shells. Sculls. Scales. Sweats. Skins. Fats. Flesh. Blood. Entrails. Urine. Bones. Extreme parts. Hearts. Liver. Lungs. Brain. Womb. Secundine. Testicles Pizzle. Bladder Sperm. Tail. Coats of the Ventricle. Exspirations. Bristles. Silk. Webs. Tears. Spittle. Honie. Wax. Eggs. Milk. Butter. Cheese. Marrow. Rennet.*

Smells whether they bee stinking or sweet, as also Poisons: whole creatures themselvs: as,

*Foxes. Whelps. Hedg-hogs. Frogs. Worms. Crabs. Craie-fishes. Scorpions. Horsleeches. Swallows. Dungs.*

From Plants, that is, Trees, Shrubs, and Herbs, are taken

*Roots. Moss. Pith. Siens. Buds. Stalks. Leavs. Flowers. Cups. Fibers, or hairie-threds. Ears. Seeds. Bark. Wood. Meal. Juices. Tears. Oils. Gums. Rosins. Rottennesse. Mass or spissament.* Manna, *which falling down like dew upon plants, presently concrete's. Whole plants, as Mallows. Onions, &c.*

Metals, or Minerals, are taken either from the Water, or Earth, and are either kindes of Earth, Stones, or Metals, &c. The kindes of Earth are,

*Bole-Armenick.* Terra sigillata. *Fuller's-earth. Chaulk. Okar. Plaster. Lime.*

Now the kindes of Stones are

*Flints.* Lapis Judaicus. Lapis Lyncis. *The Pumice.* Lap. Hæmatites. Amiantus. Galactites. *Spunge-stones. Diamonds. Saphire. Chrysolite. Topace. Load-stone. The* Pyrites *or fire-stone. Alablaster. Marble. Crystal, and manie other pretious stones.*

The kindes of Salts as well Natural as Artificial are

*Common salt.* Sal nitrum. Sal Alkali. Sal Ammoniacum. *Salt of Urine. Salt of tartar and generally all salts that may bee made of anie kinde of Plants.*

Those that are commonly called Minerals are

*Marchasite. Antimonie. Muscovic-Glass, Tuttie. Arsnick. Orpiment. Lazure, or blue. Rose-agar. Brimstone. Quick-silver. White-Copras.* Chalcitis. *Psorie. Roman Vitriol.* Colcother, *vitriol, or green coperas.* Alumen scissile, *Common Alum.* Alumen rotundum. *Round Alum.* Alumen liquidum. Alumen plumosum. Borax, *or Burrace.* Bitumen, Naphtha. Cinnabaris, *or Vermillion. Lytharge of Gold. Lytharge of Silver.* Chrysocolla. Scandaracha. *Red-lead. White-Lead, and divers other.*

Now the Metals themselvs are

*Gold, Silver, Iron, Lead, Tin, Brass, Copper, Steel, Lattin and such as arise from these; as the scales, verdigreas, rust, &c.*

Now from the Waters; as the Sea, Rivers, Lakes and Fountains, and the mud of these waters, are taken divers medicines, as white and red Corral, Pearls, and infinite other things which Nature the hand-maid of the great Architect of this world, hath produced for the cure of diseases; so that into what part soever you turn your eies, whether to the surface of the earth, or the bowels thereof, a great multitude of remedies present themselvs to your view. The choise of all which is taken from their substance, or quantitie, qualitie, action, place, season, smell, taste, site, figure, and weight, other circumstances, as *Sylvius* hath abundantly shewed in his Book written upon this Subjects. Of these Simples are made diverse Compositions; as,

Collyria. Caputpurgia. Eclegmata. *Dentifrices.* Dentiscalpia. Apophlegmatismi. *Gargarisms. Pills. Boles. Potions. Emplasters. Unguents. Cerats. Liniments. Embrocations. Fomentations. Epithemes. Attractives. Resolvers. Suppuratives. Emollients. Mundificatives. Incarnatives. Cicatrizers. Putrifiers. Corrosives. Agglutinatives. Anodynes. Apozemes. Julips. Syrups. Powders. Tablets. Opiats. Conservs. Preservs. Confections. Rowls. Vomits. Sternutatories. Sudorificks. Glysters. Pessaries. Suppositories. Fumigations. Trochisces. Frontrals. Caps. Stomachers. Bags. Baths. Half-baths. Virgins-milk.* Fuci. *Pications. Depilatories. Vesicatories. Potential cauteries. Nose-gaies. Fans. Canopies, or extended cloths to make winde. Artificial fountains, to distil or drop down liquors.*

Now these that are thought to bee nourishing Medicines, are,

*Restauratives. Cullisses. Expressions. Gellies. Ptisans. Barlie-creams. Panadoes. Almond-milks. marchpains. Wafers.* Hydrosacchar. Hydromel, *and such other drinks. Mucilages.* Oxymel. *Oxycrate. Rose-Vineger.* Hydrælium. *Metheglin. Cider. Drink of Servisses, Ale. Beer. Vineger. Verjuice. Oil. Steeled-water. Water brewed with bread-crums. Hippocras, Perrie, and such like.*

Waters and distilled oils, and divers other Chymical extractions.

As the waters and oils of hot, drie and aromatick things, drawn in a copper-Alembick, with a cooler, with ten times as much water in weight as of herbs; now the herbs must bee drie, that the distillation may the better succeed.

Waters are extracted out of flowers put into a Retort, by the heat of the Sun, or of Dung, or of an heap of pressed-out Grapes, or by *Balneo*, if there bee a Receiver put and closely luted thereto. All kindes of salt of things calcined, dissolved in water, and twice or thrice filtred, that so they may becom more pure and fit to yeeld oil.

Other distillations are made either in Cellars by the coldnes or moisture of the place, the things beeing laid either upon a marble, or elf hanged up in a bag; and thus is made oil of Tartar, and of salts, and other things of an Aluminous nature.

Bones must bee distilled by descent, or by the joining together of vessels. All woods, roots, barks,

barks, shells of fishes, and seed, or grains; as of corn, broom, beans, and other things whose juice cannot bee got out by expression, must bee distilled by descent, or by the joining together of vessels in a Reverberatorie Fornace.

Metals calcined and having acquired the nature of salt, ought to bee dissolved and filtred, and then evaporated till they bee drie; then let them bee dissolved in distilled vineger, and then evaporated and dried again; for so they will easily distil in a Cellar upon a Marble, or in a bag. Or elf by putting them into a glassie Retort, and setting it in sand, and so giving fire thereto by degrees until all the waterie humiditie bee distilled; then change the receiver, and lute another close to the Retort, then increas the fire above and below, and thus there will flow forth an oil verie red colored: Thus are all metalline things distilled, as Alums, salts, &c.

Gums, *axungiæ*, and generally all rosins are distilled by Retort set in an earthen vessel filled with Ashes upon a Fornace; now the fire must bee increased by little and little according to the different condition of the distilled matters.

*The Vessels and Instruments serving for Distillations are commonly these.*

Bottoms of Alembicks. The heads of them, from whence the liquors drop. Refrigeratories. Vessels for sublimation. For Reverberation. For distilling by descent. Crucibiles and other such. Vessels for Calcination. Hair-strainers. Bags. Earthen-platters. Vessels for circulation, as Pelicanes. Earthen-Basins for filtring. Fornaces. The secret Fornaces of Philosophers. The Philosopher's egg. Cucurbites. Retorts. Bolt-heads. Urinals. Receivers. Vessels so fitted together that the lowermost receiv's the mouth of the uppermost, whence they may bee termed conjoined Vessels: They are used in distilling *per descensum*. Marbs exquisitely smooth for distillations to bee made in Cellars. Pots to dissolv calcined metalls in.

*A Catalogue of the Surgeon's Instruments mentioned in this whole work.*

RIngs wherein little Lancets lie hid, to open Impostumes. Trunks or hollow Instruments going with springs. A vent, or cooler for the womb made like a pessarie. Hollow tents. Sundrie Cauteries; as flat, round, sharp-pointed, cutting, &c. Constrictorie rings to twitch or binde the Columella. *Speculum Oris. Ocul. Ani. Uteri.* A trunk or pipe with an actual Cauterie in it. Crooked Knives. A pipe in form of a quill. Divers trusses, with one or more boulsters. A shoulder-band to bee put about the neck, to hold up a trus. A needle to draw through a golden wier, &c. Pipes with fenestels, and needls fit for sutures. Cutting mullets. Mullets onely to hold and not to cut. Mullets to take forth splinters of bones. Mullets to draw teeth. An incision-knife. Scrapers to plain or smooth the bones, or elf to cut them. Cutting or hollow Scrapers. A leaden mallet to drive the Scrapers or Chizzels into the scull. A Gimblet in shape and use resembling that which Coopers use to lift up the sunk staves of their cask withal. Levatories, of which kinde is the three-footed one. Old Levatories, which taken by their handls, and their tongues put under the depress bones, lift them up. Saws. A desquamatorie Trepan. Pliers to take forth splinters of bones. A Gimblet to perforate the scull. A Trepan fit to divide the scull, with the scrue, point, or piercer, brace, and cover or cap that keep's it from running in too far. A plate to set one foot of the Compas upon. A cutting pair of Compasses both open and shut. A fit instrument to depres the *Dura mater* without hurting thereof. A syringe to make injection withal. A pair of Pincers with holes through them to take up the skin for making a Seton. Setons as well drie, as moistned with ointments. The Beaks of Crows, Parrats, Swans, Ducks, Lizards, Cranes, are either straight, crooked, toothed, or smooth. Catch-bullets, and Pliers to draw forth pieces of mail, and splinters of bones that lie deep in. Hollow and smooth Dilaters diversly made for the different wounds of the parts. Probes fit for to put flamula's into wounds; and these are either straight or crooked perforated or unperforated. Scrued mullets to draw forth barbed heads of arrows, and the like. Lancets to let blood, and scarrifie as well straight, as crooked. A *pyulcos*, or Matter-drawer. Ligatures, bands, swathes, thongs of leather, woollen, linnen, round, slit, sown together; again som are upper-binders, others under-binders. Again these are either expressing, or elf conteining, and that either the applied medicine, or the lips of wounds, or members put in a fit posture, which therefore they call a sarcotick Ligature. Thred. Bottoms, or clews of thred, or yarn. Pledgets, compresses, boulsters, doubled cloaths. *Ferulæ*, or Splints. Cases. Boxes. Junks. Glossocomies. *Ambi*, a kinde of Glossocomie. A pullie with it's wheels, and wooden and iron-pins, whereon the wheels may run. Ropes as well to draw & extend, as hold up the member, &c. Scrue-pins. A hand-vice. Hooks. Buttons or staies to fasten to the skin to hold together the lips of the wounds. Lint. Cushions, pillows, linnen-cloths. Files. *Dentiscalpia, Dentifricia, Dentispiscia.* Catheters, guiders of the work. A bathing chair or seat, bathing-tubs, half-tubs, caldrons, funnels, with all other circumstances belonging to a bath. Stoves, or hot-houses to sweat in. Cocks to turn and let out water. A Gimblet to break the stone. Hooks. Hollow probes slit on the upper-sides. Winged Instruments to draw forth stones. An instrument to cleans the bladder. Spathula's straight and crooked. Cupping-glasses. Horns. Pipes or catheters to wear Caruncles. Artificial members, as eies of gold enamelled, &c. An Urinal, or case to save the water in. An artificial yard. Crutches. Nipples, or leaden covers for sore breasts. Griffins talons to draw forth a *mola*, out of the womb. A sucking-glass to draw a breast withal. Pessaries, both long and oval. Syringes to give glysters, as also to make injection into the ears and womb.

The

## The Effigies of Hippocrates of *Cöos* the Prince of Physicians.

INvictum (*Hippocrates*) quòd te potuere superbæ
*Eoï* nunquam flectere Regis opes,
*Cecropidæ* fronti ex auro fulgente coronam
*Promeriti* memores imposuere tuæ.
*Gratia* sed levis est, *Actæis* tantus *Athenis*
*Nec* fuit hinc uni quàm tibi partus honos.
*Nam* quòd quæ recreent languentia corpora morbo
*Pæonias* fueris promere largus opes.
*Sed* tua tam fundit, quàm magni machina mundi
*Gratia*, & insignis tam tua fama volat.

Bon. Gra. Paris, Medic.

# Select Aphorisms concerning Surgerie, collected out of the Aphorisms of the great HIPPOCRATES,

*Aphor. 27, sect. 6.*

WHosoever beeing suppurate or hydropical, are burnt, or cut therefore, if all the matter, or water flow forth at once, they certainly die.

31. 6. The drinking of wine, or a bath, fomentation, blood-letting, or purging, help the pains of the eies.

38. 6. Such as have hidden, or not ulcerated Cancers, had better not to cure them. For healed they quickly die, not cured they live the longer.

55. 6. Gootie-pains usually stir in the Spring and Fall.

28. 6. Eunuchs are not troubled with the Gout, neither do they becom bald.

49. 6. Whosoever are troubled with the Gout, have eas in fortie daies, the inflammation ceasing.

66. 5. In great and dangerous wounds, if no swelling appear, it is ill.

67. 5. Soft tumors are good, but crude ones ill.

25. 6. For an *Erysipelas*, or inflammation to return from without inwards, it is not good; but to com from within outwards, is verie good.

19. 7. An *Erysipelas* comming upon the baring of a bone, is evil.

20. 7. Putrefaction, or suppuration comming upon an *Erysipelas*, is ill.

21. 6. If *Varices* or Hæmorrhoides happen to such as are mad, their madness cease's.

21. 7. A flux of blood ensuing upon a great pulsation in ulcers is ill.

26. 2. It is better that a fever happen upon a convulsion, then a convulsion upon a fever.

4. 6. Those Ulcers that have the skin smooth or shining about them, are evil.

18. 6. The wound is deadlie whereby the bladder, brain, heart, midriff, anie of the small guts, stomach, or Liver are hurt.

45. 6. Whatsoever ulcers are of a year's continuance or more; the bone must necessarily scale, and the scars becom hollow.

2. 7. The bone beeing affected, if the flesh bee livid, it is ill.

14. 7. Stupiditie and lack of reason, upon a blow of the head, is evil.

24. 7. A *Delirium* happen's if a bone (to wit, the scull) bee cut even to the hollowness thereof.

Whil'st *Pus*, or matter is in generating, pains and fevers happen rather then when it is alreadie made.

18. 5. Cold things are hurtful to the bones, teeth, nervs, brain, spinal marrow, but hot things are good.

46. 2. Two pains infesting together, but not the same place, the more vehement obscure's the other.

74. 7. A corruption an abscess of the bone is caussed by the corruption of the flesh.

506. *Coacar. prænot.* A livid or drie ulcer, or yellowish, is deadlie.

19. 6. When as a bone, or gristle, or nerv, or small portion of the cheek, or the prepuce is cut asunder, it neither increase's, nor grow's together.

24. 6. *Aph.* & 513. *Coacar.* If anie of the small guts bee cut, it knit's not again.

50. 7. Those that have the brain sphacelate, that is, corrupt, they die within three daies; if they escape these, they recover.

9. 7. Bleeding at a wound caussing a convulsion, is the fore-teller of death.

20. 5. Cold is biting to ulcers; harden's the skin, causse's pain, not easily comming to suppuration, blackness, aguish shakings, convulsions, cramps.

508. *Coac.* Those who have the temples cut, have a convulsion upon the parts contrarie to the section.

44. 7. Whosoever beeing suppurate are burnt or cut, if pure and white quitture shall flow forth they escape; but if that which is bloodie, feculent, and stinking, then they die.

*Galen. Comment. ad Aphor.* 29. 2. It is not fit to take in hand to cure such as are in a desperate case, but to leav them, one fore-telling the end of the disease.

*Celsus, Cap.* 10. *Lib.* 20. It is better to trie a doubtful remedie then none at all.

The

The Effigies of Galen the Prince of Physicians next to Hippocrates,

Æ

*Quum erat Hippocratem divino è semine Divûm,*
*Orbem muneribus conciliare sibi:*
*Scripta sed in volvit tam multo ænigmate, verum*
*Ut quamvis solers nullus habere queat;*
*Pergamei auxilio nisi sint monimenta Galeni,*
*Qui doctâ ambages sustulit arte senis.*
*Ergò macte esto virtute, arcana resolvens,*
*Quæ nulli fuerant nota (Galene) priùs;*
*Obstringénsque orbem æterno tibi munere totum,*
*Æternis sacras te quoque temporibus.*

Bon. Gra. Paris. Medic.

# Rules of Surgerie by the Autor.

1 PRactice is an operation agreeable to the Rules and Laws of the Theorie.

2 Health is not received by Words, but by Remedies fitly uſed.

3 Remedies known and approoved by uſe and reaſon, are to bee preferred before ſuch as are unknown, or but lately found out.

4 Science without experience get's the Phyſician no great credit with the Patient.

5 Hee that would perform anie great and notable work, muſt diligently applie himſelf to the knowledg of his ſubject.

6 It is the part of a good Phyſician to heal the diſeaſ, or certainly to bring it to a better paſs, as nature ſhall give leav.

7 The Surgeon muſt bee active, induſtrious, and well-handed, and not truſt too much to Books.

8 Hee that hath not been verſed in the operations of the Art, nor a frequent auditor of the Lectures of ſuch as are learned therein, and ſet's forth himſelf for a brave Surgeon, for that hee hath read much, hee is either much deceived or impudent.

9 Hee ſhall never do anie thing praiſ-worthie, that hath got his maſterie in Surgerie by gold, not by uſe.

10 You ſhall comfort the Patient with hope of Recoverie, even when as there is danger of death.

11 To change Phyſicians and Surgeons is troubleſom, but not good for the Patient.

12 Though the diſeaſ proov long, yet it is not fit that the Phyſicians give over the patient

13 Great wounds of large veſſels are to bee judged deadlie.

14 Everie contuſion muſt bee brought to ſuppuration.

15 As the nature or kinde of the diſeaſ muſt bee known, ſo alſo muſt the remedie.

16 An Abſceſs of the bone of the palat, is in danger to cauſ a ſtinking-breath.

87 Bleeding cauſſed by heat muſt bee repreſt by cold.

18 Wounds of nervous parts require medicines which by the ſubtiltie of the parts may enter in and draw from far.

19 It is not fit for ſuch as have Ulcers in their Legs, neither to walk, ſtand nor ſit, but to reſt themſelvs in bed.

20 All biting and acrid medicines are offenſive to clean Ulcers.

21 For reſtoring of diſlocations you muſt hold them faſt, ſtretch them out, and force them in.

22 A great Gangrene admit's nó cure, but cutting.

23 A monſter is a thing diſſenting from the laws of nature.

24 Wounds of the Cheſt preſently becom ſanious and purulent.

25 The wounds made by all venemous creatures are dangerous.

26 The ſouth-winde blowing, wounded members eaſily becom mortified.

27 Such as are wounded, and deſire to bee quickly whole, muſt keep a ſpare diet.

28 Untemperate bodies do not eaſily recover of diſeaſes.

29 Round Ulcers, unleſs they bee drawn into another figure, do not eaſily heal up.

30 An Eryſipelatous Ulcer require's purgation by ſtool.

31 Crying is good for an infant, for it ſerv's in ſtead of exerciſe and evacuation.

32 Grief is good for none but ſuch as are verie fat.

33 Idleneſs weaken's and exſtinguiſheth the native heat.

24 An ill-natured Ulcer yeeld's not unleſs to a powerful remedie.

35 A bath reſolv's and diſcuſſes humors, and gently procure's ſweat.

36 Cold diſeaſes are troubleſom to old people, and hard to bee helped; but in young bodies they are neither ſo troubleſom, nor contumacious.

37 Exerciſed bodies are leſs ſubject to diſeaſes

38 Moiſt bodies though they need ſmall nouriſhment, yet ſtand they in need of large evacuation.

39 Sick people die ſooner of an hot diſtemper then of a cold, by reaſon of the quick and active operation of fire.

40 The quitture that flow's from an ulcer is laudable, which is white, ſmooth and equal.

*The end of the twentie ſeventh Book.*

# How to make Reports, and to Embalm the Dead.

## The Twentie eighth Book.

NOw it onely remain's that wee inſtruct the Surgeon in making and framing his Report, or opinion, either of the death of anie perſon, or of the weakneſs, or depriva- vation of anie member in the function or execution of its proper office and dutie. Herein it is meet that hee bee verie conſiderate that is to ſaie, ingenious or wiſe in making his Report, becauſ the events of diſeaſes are often-times doubtful and uncertain, neither can anie man fore-tel them certainly, whether they will bee for life or death, by reaſon of the manifold nature of the ſubject of which wee ſpeak, and alſo the uncertain condition of the humors both in their kinde and motion. Which was the cauſ why *Hippocrates* even in the firſt of his Aphoriſms pronounceth, that judgment is difficult. But firſt of all, it is verie expedient that a Surgeon bee of an honeſt minde, that hee may alwaies have before his eies a careful regard of true pietie; that is to ſaie, the fear of God and faith in Chriſt, and love toward his neighbors, with hope of life everlaſting, leſt that hee beeing carried away by favor, or corrupted with monie or rewards, ſhould affirm or teſtifie thoſe wounds to bee ſmall that are great, and thoſe great that are ſmall; for the report of the wound is received of the Surgeon according to the Civil Law.

Why a Surgeon muſt bee careful in making of Reports.

What judgment is difficult.

It is recorded in the works of antient Phyſicians that wounds may bee called great for three reſpects.

Wounds termed great for three reſpects.

The firſt is by reaſon of the greatneſs of the diſſolved Unitie or reſolution of Continuitie; and ſuch are theſe wounds which made by a violent ſtroke with a back-ſword have cut off the arm, or leg, or overthwart the breaſt. The ſecond is by reaſon of the dignitie or worthineſs of the part; now this dignitie dependeth on the excellencie of the action; therefore thus anie little wound made with a bodkin, knife, in anie part whoſe ſubſtance is noble: as in Brain, Heart, Liver or anie other part whoſe action and function is neceſſarie to preſerv life, as in the Weaſant, Lungs, or Bladder, is judged great. The third is, by reaſon of the greatneſs and ill habit, or the abundance of ill humors or debilitie of all the wounded bodie; ſo thoſe wounds that are made in the nervous parts, and old decaied people, are ſaid to bee great. But in ſearching of wounds let the Surgeon take heed that hee bee not deceived by his probe. For manie times it cannot go into the bottom of the wound but ſtoppeth, and ſticketh in the waie, either becauſ hee hath not placed the patient in the ſame poſture, wherein hee was when hee received his hurt; or elſ for that the ſtroke beeing made down right, ſlipt aſide to the right or left hand, or elſ from below upwards, or from above downwards, and then hee may exſpect that the wound is but little and will bee cured in a ſhort time, when it is like to bee long in curing, or elſ mortal. Therefore from the firſt daie it behooveth him to ſuſpend his judgment of the wound until the ninth, for in time the accidents will ſhew themſelvs manifeſtly, whether they bee ſmall or great, according to the condition of the wound, or wounded bodies, and the ſtate of the air according to his primitive qualities, or venemous corruption.

How long a Surgeon muſt ſuſpend his judgment in ſom caſes.

But generally the ſigns, whereby wee may judg of diſeaſes, whether they bee great or ſmall, of long or ſhort continuance, mortal or not mortal, are four. For they are drawn either from the nature and eſſence of the diſeaſ, or from the cauſ or effects thereof, or elſ from the ſimilitude, proportion, and compariſon of thoſe diſeaſes with the ſeaſon or preſent conſtitution of the times. Therefore if wee are called to the cure of a green wound, whoſe nature and danger is no other but a ſimple ſolution of Continuitie in the muſculous fleſh, wee may preſently pronounce that wound to bee of no danger, and that it will ſoon bee cured. But if it have an Ulcer annexed unto it, that is, if it bee ſanious, then wee may ſaie it will bee more difficult and long in curing; and ſo wee may pronounce of all diſeaſes, taking a ſign of their eſſence and nature. But of the ſigns that are taken of the cauſſes, let this bee an example. A wound that is made with a ſharp-pointed and heavie weapon; as with an halberd beeing ſtricken with great violence muſt bee accounted great, yea and alſo mortal, if the accidents bee correſpondent.

General ſigns whereas by wee judg of diſeaſes.

But if the patient fall to the ground through the violence of the ſtroke, if a cholerick vomiting follow thereon, if his ſight fail him, together with a giddineſs, if blood com for at his eies and noſtrils, if diſtraction follow with loſs of memorie and ſenſ of feeling: wee may ſaie, that all the hope of life remaineth in one ſmall ſign which is to bee deduced from the effects of the wound. But by the comparing it unto the ſeaſon that then is, and diſeaſes that then aſſault man's bodie, wee may ſaie, that all thoſe that are wounded with gun-ſhot are in danger of death, as it happened in the skirmiſhes at the ſiege of *Roan*, and at the battel of Saint *Denis*. For at that time, whether it were by reaſon of the fault of the heavens, or air, through

Wounds dead-lie by the fault of the air.

the evil humors of man's bodie, and the disturbance of them; all wounds that were made by gun-shot, were for the most part mortal. So likewise at certain seasons of the year, wee see the small-pocks and meazels break forth in children, as it were by a certain pestilent contagion to the destruction of children onely, inferring a most cruel vomit and lask; and in such a season the judgment of those diseases is not difficult. But you by the following signs may know what parts are wounded. If the patient fall down with the stroke, if hee lie senseless, as it were asleep, if hee avoid his excrements unwittingly, if hee bee taken with giddiness, if blood com out at his ears, mouth, and nose, and if hee vomit choler, you may understand that the scull is fractured, or pierced through, by the defect in his understanding and discourse. You also may know when the scull is fractured, by the judgment of your external senses, as if by feeling it with your finger you finde it elevated or depressed beyond the natural limits, if by striking it with the end of a probe, when the *Pericranium* or nervous film that investeth the scull is cut cross-wise; and so divided there from it, yeeld a base and unperfect sound like unto a pot-sheard that is broken, or rather like unto an earthen-pitcher that hath a cleft, or rent therein.

Signs of a fractured scull.

Signs of death by a wound on the head.

But wee may say, that death is at hand if his reason and understanding fail him, if hee bee speechless, if his sight forsake him, if hee would tumble head-long out of his bed, beeing not at all able to remoov the other parts of his bodie; if hee have a continual fever, if his tongue bee black with drinesse, if the edges of the wound bee black or drie, and cast forth no sanious matter, if they resemble the color of salted-flesh, if hee have an apoplexie, phrensie, convulsion or palsie, with an involuntarie excretion, or absolute suppression of the urine and excrements. You may know that a man hath his throat, that is, his weason and winde-pipe cut. First by the sight of his wound, and next by the abolishment of the function or office thereof both waies, for the patient can neither speak nor swallow anie meat or drink; and the parts that are cut asunder, divide themselvs by retraction upwards or downwards one from another, whereof commeth sudden or present death. You may know that a wound hath pierced into the breast or concavitie of the bodie, if the air com forth at the wound making a certain whizzing noise, if the patient breathe with great difficultie, if hee feel a great heavinesse or weight on or about the midriff, whereby it may bee gathered, that a great quantitie of blood lieth on the place or midriff, and so causeth him to feel a weight or heavinesse, which by little and little, will bee cast up by vomiting. But a little after a fever commeth, and the breath is unsavorie, and stinking, by reason that the putrifying blood is turned into *sanies*: the patient cannot lie but on his back, and hee hath an often desire to vomit, but if hee escape death, his wound will degenerate into a Fistula, and at length will consume him by little and little.

Signs that a wound hath pierced in the concavitie of the chest.

Signs that the throat is cut.

Signs that the Lungs are wounded.

Wee may know that the Lungs are wounded by the foaming and spumous blood comming out both at the wound and cast up by vomiting; hee is vexed with a grievous shortnesse of breath and with a pain in his sides. Wee may perceiv the Heart to bee wounded by the abundance of blood that commeth out at the wound, by the trembling of all the whole bodie, by the faint and small pulse, paleness of the face, cold sweat, with often swooning, coldness of the extreme parts, and sudden death.

That the Heart is wounded.

The Midriff.

When the midriff (which the Latines call *Diaphragma*) is wounded, the patient feeleth a great weight in that place, hee raveth and talketh idlely, hee is troubled with shortnesse of winde, a cough, and fit of greevous pain, and drawing of the intrals upwards. Wherefore when all these accidents appear, wee may certainly pronounce that death is at hand.

The *Vena Cava* and great Arterie.

Death appeareth suddenly, by a wound of the hollow Vein, or the great Arterie, by reason of the great and violent evacuation of blood and spirits, whereby the functions of the Heart and Lungs are stopped and hindered.

The spinal marrow.

The marrow of the back bone beeing pierced, the patient is assaulted with a palsie or convulsion verie suddenly, and sence and motion faileth in the parts beneath it, the excrements of the bladder are either evacuated against the patients will, or elf are altogether stopped.

The Liver.

When the Liver is wounded, much blood commeth out at the wound, and pricking-pain disperseth it self even unto the sword-like gristle, which hath it's situation at the lower end of the breast-bone called *Sternon*: the blood that falleth from thence down into the intestines doth often-times infer most malign accidents, yea, and somtimes death.

The Stomach.

When the stomach is wounded, the meat and drink com out at the wound, there followeth a vomiting of pure choler, then commeth sweating and coldness, of the extreme parts, and therefore wee ought to prognosticate death to follow such a wound.

The Spleen.

When the Milt or Splene is wounded, black and gross blood cometh out at the wound, the patient will bee verie thirstie, with pain on the left side, and the blood break's forth into the bellie, and there putrifying causeth most malign and greevous accidents, and oten-times death to follow.

The Guts.

When the guts are wounded, the whole bodie is griped and pained, the excrements com out at the wound, whereat also often-times the guts break forth with great violence.

The Kidnies.

When the Reins or Kidnies are wounded, the patient will have great pain in making his urine, and the blood commeth out together therewith; the pain commeth down even unto the groin, yard, and testicles.

The Bladder.

When the Bladder and Ureters are wounded, the pain goeth even unto the entrails; the

parts

parts all about, and belonging to the groin are diſtended, the urine is bloodie that is made, and the ſame alſo commeth oftentimes out of the wound.

When the womb is wounded, the blood commeth out at the privities, and all other accidents appear, like as when the bladder is wounded. The womb.

When the ſinews are pricked or cut half aſunder, there is great pain in the affected place, and there followeth a ſudden inflammation, flux, abceſs, fever, convulſion, and oftentimes a gangrene or mortification of the part, whereof commeth death, unleſs it bee ſpeedily prevented. The nervs.

Having declared the ſigns and tokens of wounded parts, it now remaineth that wee ſet down other ſigns of certain kindes of death that are not common, or natural, whereabout when there is great ſtrife and contention made, it oftentimes is determined and ended by the judgment of the diſcreet Phyſician or Surgeon.

Therefore if it chance, that a nurſ either through drunkenneſs, or negligence, lie's upon her infant lying in bed with her and ſo ſtifle's or ſmother's it to death: If your judgment bee required, whether the infant died through the default, or negligence of the nurſ? or through ſom violent or ſudden diſeaſes that laie hidden and lurking in the bodie thereof? You ſhall finde out the truth of the matter by theſe ſigns following. Signs that an infant is ſmothered, or over-laid.

For if the infant were in good health before; if hee were not froward or crying; if his mouth and noſtrils, now beeing dead, bee moiſt'ned or bedewed with a certain foam, if his face bee not pale, but of a Violet or Purple color; if when the bodie is opened the Lungs bee found ſwoln and puffed up, as it were with a certain vaporous foam and all other intrals ſound; it is a token that the infant was ſtifled, ſmothered or ſtrangled by ſom outward violence.

If the bodie or dead corps of a man bee found lying in a field, or houſ alone, and you bee called by a Magiſtrate to deliver your opinion, whether the man were ſlain by lightning or ſom other violent death? You may by the following ſigns finde out the certaintie hereof.

For everie bodie that is blaſted, or ſtricken with lightning, doth caſt forth or breathe out an unwholſom, ſtinking or ſulphureous ſmel, ſo that the birds or fowls of the air, nor dogs will not once touch it, much leſs preie or feed on it: the part that was ſtricken oftentimes ſound, and without a wound, but if you ſearch it well, you ſhall finde the bones under the skin to bee bruiſed, broken or ſhivered in pieces. Signs of ſuch as are ſlain by lightning.

But if the lightning hath pierced into the bodie, which making a wound therein (according to the judgment of *Plinie*) the wounded part is far colder then all the reſt of the bodie. For lightning driveth the moſt thin and fierie air before it, and ſtriketh it into the bodie with great violence, by the force whereof the heat that was in the part is ſoon diſperſed, waſted aud conſumed. Lightning doth alwaies leav ſom impreſſion or ſign of ſom fire either by uſtion or blackneſs: for no lightning is without fire. *Lib.2.cap.54.*

Moreover whereas all other living creatures when they are ſtricken with lightning fall on the contrarie ſide, onely man falleth on the affected ſide, if hee bee not turned with violence toward the coaſt or region from whence the lightening came.

If a man bee ſtricken with lightening while hee is aſleep, hee will bee found with eies open; contrariwiſe, if hee bee ſtricken while hee is awake, his eies will bee cloſed, as *Plinie* writeth. *Philip Commines* writeth that thoſe bodies that are ſtricken with lightning are not ſubject to corruption as others are.

Therefore in antient time it was their cuſtom neither to burn, nor burie them, for the brimſtone which the lightning bringeth with it, was unto them in ſtead of ſalt, for that by the drieneſs and fierie heat thereof it did preſerv them from putrefaction.

Alſo it may bee inquired in judgement, Whether anie that is dead and wounded, received theſe wounds alive or dead. Truely the wounds that are made of a living man, if hee die of them, after his death will appear red and bloodie, with the ſides or edges ſwoln, or pale round about: contrariwiſe, thoſe that are made in a dead man, will bee neither red, bloodie, ſwoln, nor puffed up. For all the faculties and functions of life in the bodie do ceaſ and fall together by death; ſo that thenceforth no ſpirits nor blood can bee ſent, or flow into the wounded place. Therefore by theſe ſigns which ſhall appear it may bee declared that hee was wounded dead or alive. Signs of wonnds given to a living and dead man

The like queſtion may com in judgment when a man is found hanged, whether hee were dead, or alive. Therefore if hee were hanged alive, the impreſſion or print of the rope will appear red, pale, or black, and the skin round about it will bee contracted or wrinkled, by reaſon of the compreſſion which the cord hath made; alſo oftentimes the head of the *aſpera arteria* is rent and torn, and the ſecond ſpondyl, and the neck luxated or mooved out of his place. Alſo the arms and leggs will bee pale, by reaſon of the violent and ſudden ſuffocation of the ſpirits: moreover there will bee a foam about his mouth, and a foamie and filthie matter hanging out of his noſtrils, beeing ſent thither both by reaſon that the Lungs are ſuddenly heated and ſuffocated, as alſo by the convulſion and concuſſion of the brain like as it were in the falling-ſickneſs. Contrariwiſe if hee bee hanged dead, none of theſe ſigns appear: for neither the print of the rope appear's red or pale, but of the ſame color as the other parts of the bodie are, becauſ in dead men the blood and ſpirits do not flow to the greeved parts. Signs whether one bee hanged alive or dead.

Who-

Whether one found dead in the water came therein alive or dead.

Whoſoever is found dead in the waters, you ſhall know whether they were thrown into the water alive or dead. For all the bellie of him that was thrown in alive, will bee ſwoln and puffed up by reaſon of the water that is conteined therein; certain clammie excrements com out at his mouth and noſtrils, the ends of his fingers will bee worn and excoriated, becauſ that hee died ſtriving and digging or ſcraping in the ſand or bottom of the river, ſeeking ſomwhat whereon hee might take hold to ſave himſelf from drowning. Contrariwiſe if hee bee thrown into the waters, beeing dead before, his bellie will not bee ſwol'n, becauſ that in a dead man all the paſſages and conduits of the bodie do fall together, and are ſtopped and cloſed, and for that a dead man breathe's not, there appeareth no foam nor filthie matter about his mouth and noſe, and much leſs can the tops of his fingers bee worn and excoriated, for when a man is alreadie dead, hee cannot ſtrive againſt death.

But as concerning the bodies of thoſe that are drowned, thoſe that ſwim on the upper part of the water beeing ſwoln or puffed up, they are not ſo by reaſon of the water that is conteined in the bellie, but by reaſon of a certain vapor, into which a great portion of the humors of the bodie are converted by the efficacie of the putrifying heat. Therefore this ſwelling appeareth not in all men which do periſh, or elſ are caſt out dead into the waters, but onely in them which are corrupted with the filthineſs or muddineſs of the water, long time after they were drowned, and caſt on the ſhore.

Of ſuch as are ſmothered by Charcoal.

But now I will declare the accidents that com to thoſe that are ſuffocated and ſtifled or ſmothered with the vapor of kindled or burning-charcoals, and how you may fore-tel the cauſſes thereof by the hiſtorie following. In the yeare of our Lord God 1575. the tenth daie of May, I with *Robert Greauline* Doctor of Phyſick, was ſent for by Maſter *Hamel* an Advocate of the Court of Parlament of *Paris*, to ſee and ſhew my opinion on two of his ſervants, of whom the one was his Clerk, and the other his Horſ-keeper. All his familie ſuppoſed them dead, becauſ they could not perceiv or feel their Arteries to beat, all the extreme parts of their bodies were cold, they could neither ſpeak nor moov, their faces were pale and wan, neither could they bee raiſed up with anie violent beating or plucking by the hair. Therefore all men accounted them dead, and the queſtion was onely of what kinde of death they died, for their maſter ſuſpected that ſom bodie had ſtrangled them, others thought that each of them had ſtopped one another's winde with their hands: and others judged that they were taken with a ſudden apoplexie. But I preſently inquired whether there had been anie fire made with coals in the houſ lately, whereunto their maſter giving ear, ſought about all the corners of the chamber (for the chamber was verie little and cloſe) and at laſt found an earthen-pan with charcoal half burned: which when wee once ſaw, wee all affirmed with one voice, that it was the cauſ of all this misfortune, & that it was the malign fume and venemous vapor, which had ſmothered them, as it were by ſtopping the paſſages of their breath. Therefore I put my hand to the regions of their hearts, where I might perceiv that there was ſom life remaining by the heat and pulſation that I felt though it were verie little, wherefore wee thought it convenient to augment and increaſ it. Therefore firſt of all, artificially opened their mouths, which were verie faſt cloſed, and ſticking obſtinately together; and thereinto both with a ſpoon and alſo with a ſilver-pipe, wee put *aqua vitæ* often diſtilled with diſſolved *hiera* and triacle; when wee had injected theſe medicines often into their mouths, they began to moov and to ſtretch themſelvs, and to caſt up and expel manie viſcous excremental and filthie humors at their mouth and noſtrils, and their lungs ſeemed to bee hot, as it were in their throats.

Therefore then wee gave them vomitories of a great quantitie of *Oxymel*, and beat them often violently on the laſt ſpondil of the back, and firſt of the loins, both with the hand and knee (for unto this place the orifice of the ſtomach is turned) that by the power of the vomitorie medicine, and concuſſion of the ſtomach, they might bee conſtrained to vomit. Neither did our purpoſe fal us, for preſently they voided clammie, yellow and ſpumous phlegm and blood.

But wee not beeing content with all this, blowed up into their noſtrils, out of a Gooſquil, the powder of *Euphorbium*, that the expulſive faculti*e* of the brain might bee ſtirred up to the expulſion of that which oppreſſed it; therefore preſently the brain beeing ſhaken, or mooved with ſneeſing and inſtimulated thereunto by rubbing the chymical oil of mints on the palate and on the cheeks, they expelled much viſcous and clammie matter at their noſtrils.

Then wee uſed frictions of their arms, legs, and back-bones; and miniſtred ſharp glyſters, by whoſe efficacie the bellie beeing abundantly looſened, they began preſently to ſpeak and to take things that were miniſtred unto them of their own accord, and ſo came to themſelvs again.

In the doing of all theſe things, *James Guillemeau* Surgeon unto the King, and of *Paris*, and *John* of Saint *Germanes* the Apothecarie, did much help and further us.

In the afternoon that the matter beeing well begun might have good ſucceſs, *John Hautie*, and *Lewis Thibaut*, both moſt learned Phyſicians, were ſent for unto us, with whom wee might conſult on other things that were to bee don. They highly commended all things that wee had don alreadie, thought it verie convenient that cordials ſhould bee miniſtred unthem, which, by ingendring of laudable humors, might not onely generate new ſpirits, but

alſo

alſo attenuate and purifie thoſe that were groſs and cloudie in their bodies. The reſt of our conſultation was ſpent in the inquirie of the cauſ of ſo dire a miſchance. For they ſaid it was no new or ſtrange thing, that men may bee ſmothered with the fume and cloudie vapor of burning-coals.

For wee reade in the works of *Fulgoſius*, *Volaterenus* and *Egnatius*, that as the Emperor *Jovinian*, travelled in winter-time towards Rome, hee beeing wearie in his journie, reſted at a village called *Didaſtanes*, which divideth *Bithynia* from *Galatia*, where hee laie in a chamber that was newly made, and plaiſtered with lime, wherein they burn'd manie coals, for to drie the work or plaſtering, that was but as yet green on the walls or roof of the chamber. Now hee died the verie ſame night beeing ſmothered or ſtrangled with the deadlie and poiſonous vapor of the burned charcoal, in the mid'ſt of the night; this happened to him in the eight month of his reign, the thirtieth year of his age, and on the twentieth daie of Auguſt. But what need wee to amplifie this matter by the antient hiſtories, ſeeing that not manie years ſince three ſervants died in the houſ of *John Bigine* goldſmith, who dwelleth at the turning of the bridge of the Change, by reaſon of a fire made of coals in a cloſe chamber, without a chimnie where they laie. And as concerning the cauſſes, theſe were alledged. Manie were of opinion that it happened by the default of the vapor proceeding from the burned coals, which beeing in a place void of all air or winde, infer's ſuch like accidents as the vapor or muſt of new wine doth, that is to ſaie, pain, and giddineſs of the head. For both theſe kinds of vapor beſides that they are crude, like unto thoſe things whereof they com, can alſo verie ſuddenly obſtruct the original of the Nervs, and ſo cauſ a convulſion, by reaſon of the groſſneſs of their ſubſtance. *Lib.9.cap.12. lib.23. An hiſtorie.*

For ſo *Hipocrates* writing of thoſe accidents that happen by the vapor of new wine, ſpeaketh. If anie man beeing drunken do ſuddenly becom ſpeechleſs and hath a convulſion, hee dieth unleſs hee have a fever therewithal; or if hee recover not his ſpeech again when his drunkenneſs is over. *Sect. 5. Aph. 5.*

Even on the ſame manner the vapor of the coals aſſaulting the brain cauſſed them to bee ſpeechleſs, unmoovable and void of all ſenſ, and had died ſhortly unleſs by miniſtring and applying warm medicines into the mouth and to the noſtrils, the groſſneſs of the vapor had been attenuated, and the expulſive faculties mooved or provoked to expel all thoſe things that were noiſom: and alſo although at the firſt ſight the Lungs appeared to bee grieved more then all the other parts, by reaſon that they drew the malign vapor into the bodie, yet when you conſider them well, it will manifeſtly appear that they are not grieved, unleſs it bee by the ſympathie or affinitie that they have with the brain when it is verie grievouſly afflicted.

The proof hereof is, becauſ preſently after, there followeth an interception or defect of the voice, ſenſ and motion: which accidents could not bee unleſs the beginning or original of the nervs were intercepted or letted from performing its function, beeing burthened by ſom matter contrarie to nature.

And even as thoſe that have an apoplexie do not die but for want of reſpiration, yet without anie offence of the Lungs, even ſo theſe two young men's deaths were at hand, by reaſon that their reſpiration or breathing was in a manner altogether intercepted, not through anie default of the Lungs, but of the brain and nervs diſtributing ſenſ and motion to the whole bodie and eſpecially to the inſtruments of reſpiration. Others contrariwiſe contended and ſaid, that there was no default in the brain, but conjectured the interception of the vital ſpirits letted or hindered from going up into the brain from the heart, by reaſon that the paſſages of the Lungs were ſtopped, to bee the occaſion that ſufficient matter could not bee afforded for to preſerv and feed the animal-ſpirit. Which was the cauſ that thoſe young men were in danger of death, for want of reſpiration, without which there can bee no life. *The occaſion of the death of ſuch as have the apoplexie.*

For the heart beeing in ſuch a caſe, cannot deliver it ſelf from the fuliginous vapor that encompaſs it, by reaſon that the Lungs are obſtructed by the groſſneſs of the vapor of the coals, whereby inſpiration cannot well bee made, for it is made by the compaſſing air drawn into our bodies: but the air that compaſſeth us doth that which nature endevoureth to do by inſpiration, for it moderateth the heat of the heart, and therefore it ought to bee endued with four qualities. The firſt is, that the quantitie that is drawn into the bodie bee ſufficient. The ſecond is, that it bee cold, or temperate in quantitie. The third is, that it bee of a thin and mean conſiſtence. The fourth is, that it bee of a gentle and benign ſubſtance.

But theſe four conditions were wanting in the air which theſe two young men drew into their bodies beeing in a cloſe chamber.

For firſt, it was little in quantitie, by reaſon that ſmall quantitie that was conteined in that little cloſe chamber, was partly conſumed by the fire of coals, no otherwiſe then the air that is conteined in a cupping-glaſs is conſumed in a moment by the flame ſo ſoon as it is kindled. *Conditions of the air good to breathe in.*

Furthermore it was neither cold nor temperate, but as it were inflamed with the burning fire of coals.

Thirdly,

Thirdly, it was more groſs in conſiſtence then it ſhould bee by reaſon of the admixtion of the groſſer vapor of the coals: for the nature of the air is ſo that it may bee ſoon altered, and will verie quickly receiv the forms and impreſſions of thoſe ſubſtances that are about it.

Laſtly, it was noiſom and hurtful in ſubſtance, and altogether offenſive to the aierie ſubſtance of our bodies. For Charcoals are made of green wood burnt in pits under ground, and then extinguiſht with their own fume or ſmoak, as all Colliers can tell. Theſe were the opinions of moſt learned men although they were not altogether agreeable one unto another, yet both of them depended on their proper reaſons. For this at leaſt is manifeſt, that thoſe paſſages, which are common to the breſt and brain, were then ſtopped with the groſſneſs of the vapors of the coals: whereby it appeareth that both theſe parts were in fault, for as much as the conſent and connexion of them with the other parts of the bodie is ſo great, that they cannot long abide ſound and perfect without their mutual help by reaſon of the loving and friendlie ſympathie and affinitie that is between all the parts of the bodie one with another.

Wherefore the ventricles of the brain, the paſſages of the lungs and the ſleepie Arteries beeing ſtopped, the vital ſpirit was prohibited from entring into the brain, and conſequently the animal ſpirit retained and kep't in, ſo that it could not com or diſperſ it ſelf through the whole bodie, whence happened the defect of two of the faculties neceſſarie for life.

Of the ſigns of virginitie. It manie times happeneth and is a queſtion too frequently handled concerning women's maiden-heads; whereof the judgement is verie difficult. Yet ſom ancient women and Midwives will brag that they aſſuredly know it by certain and infallible ſigns. For (ſaie they) in ſuch as are virgins there is a certain membrane of parchment-like skin in the neck of the womb, which will hinder the thruſting in of the finger if it bee put in anie thing deep, which membrane is broken when firſt they have carnal copulation, as may afterwards bee perceived by the free entrance of the finger. Beſides, ſuch as are defloured have the neck of their womb more large and wide; as on the contrarie, it is more contracted, ſtrait and narrow in virgins. But how deceitful and untrue theſe ſigns and tokens are, ſhall appear by that which followeth; for this membrane is a thing preternatural, and which is ſcarce found to bee in one of a thouſand from the firſt conformation. Now the neck of the womb will bee more open or ſtrait according to the bigneſs and age of the partie. For all the parts of the bodie have a certain mutual proportion and commenſuration in a well-made bodie.

*Lib. de error. popul.* *Joubertus* hath written, that at *Lectoure* in *Gaſconie*, a woman was delivered of a child in the ninth year of her age, and that ſhee is yet alive and called *Joan de Perié* being wife to *Videau Beche* the receiver of the amercements of the King of *Navare*: which is a moſt evident argument, that there are ſom women more able to accompanie with a man at nine years old, then manie other at fifteen, by reaſon of the ample capacitie of their womb and the neck thereof; Beſides alſo, this paſſage is enlarged in manie by ſom accident, as by thruſting their own fingers more ſtrongly thereinto by reaſon of ſom itching, or by the putting up of a Nodule, or Peſſarie of the bigneſs of a man's yard, for to bring down the courſes. Neither to have milk in their breſts is anie certain ſign of loſt virginitie; For *Hippocrates* thus write's; But if a woman which is neither with child, nor hath had one, have milk in her breſts, then her courſes have failed her.

*Aph. 39. ſect. 5.*

*Lib. 4. de hiſt. animal. c. 20.* Moreover, *Ariſtotle* report's that there bee men who have ſuch plentie of milk in their breſts, that it may bee ſucked or milked out.

*Lib. 12. de ſubtilitate.* *Cardan* write's, that hee ſaw at *Venice* one *Antonie Buſſey* ſom 30. years old, who had milk in his breſts in ſuch plentie, as ſufficed to ſuckle a child, ſo that it did not onely drop, but ſpring out with violence like a woman's milk. Wherefore let Magiſtrates beware leſt thus admoniſhed, they too raſhly aſſcent to the reports of women. Let Phyſicians and Chirurgions have a care leſt they do too impudently bring Magiſtrates into an error, which will not redound ſo much to the judge's diſgrace, as to their's.

But if anie deſire to know, whether one bee poiſoned, let him ſearch for the Symptoms and ſigns in the foregoing and particular treatiſ of poiſons. But that this doctrine of making reports may bee the eaſier, I think it fit to give preſidents, in imitation whereof the young Chirurgion may frame others. The firſt preſident ſhall bee of death to enſue; a ſecond of a doubtful judgement of life and death; the third of a impotencie of a member; the fourth of the hurting of manie members.

Acertificate of death. I *A.P.* Chirurgion of *Paris*, this twentieth daie of Maie by the command of the Counſel, entred into the houſ of *John Broſſey*, whom I found lying in bed, wounded on his head, with a wound in his left temple, piercing the bone with a fracture and effracture, or depreſſion of the broken bone, ſcales and *meninges* into the ſubſtance of the brain, by means whereof, his pulſ was weak, hee was troubled with raving, convulſion, cold ſweat, and his appetite was dejected. Whereby may bee gathered that certain and ſpeedie death is at hand. In witneſs whereof I have ſigned this Report with my own hand.

Another in a doubtful caſe. By the Coroner's command I have viſited *Peter Lucey*, whom I found ſick in bed, beeing wounded with a Halbert on his right thigh. Now the wound is of the bredth of three fingers and ſo deep that it pierce's quite through his thigh with the cutting alſo of the vein and arterie whence enſued much effuſion of blood, which hath exceedingly weakned him, & cauſſed him to

ſwound

ſwound often; now all his thigh is ſwoln, livid, and give's occaſion to fear worſ ſymptoms, which is the cauſ that the health and ſafetie of the partie is to bee doubted of.

By the Juſtice's command I entred into the houſ of *James Bertey*, to viſit his own brother; I found him wounded in his right arm, with a wound of ſom four fingers bigneſs, with the cutting of the tendons bending the leg, and of the veins, arteries, and Nervs. Wherefore I affirm that hee is in danger of his life, by reaſon of the malign ſymptoms that uſually happen upon ſuch wounds, ſuch as are great pain, a fever, inflammation, abſceſs, convulſion, gangrene and the like. Wherefore hee ſtand's of provident and careful dreſſing, by benefit whereof if hee eſcape death, without doubt hee will continue lame, during the remainder of his life, by reaſon of the impotencie of the wounded part. And this I affirm under my hand. In the loſs of a member.

Wee the Surgeons of *Paris*, by the command of the Senate, this twentieth daie of March, have viſited Maſter *Lewis Vertoman*, whom wee found hurt with five wounds. The firſt infli-ſted on his head, in the middle of his fore-head-bone, to the bigneſs of three fingers, and it penetrate's even to the ſecond table, ſo that wee were forced to pluck away three ſplinters of the ſame bone. The other was athwart his right cheek, and reacheth from his ear to the mid'ſt of his noſe, wherefore wee ſtitched it with four ſtitches. The third is on the mid'ſt of his bellie, of the bigneſs of two fingers, but ſo deep that it aſcend's into the capacitie of the bellie, ſo that wee were forced to cut away portion of the Kall, comming out thereat, to the bigneſs of a walnut, becauſ having loſt it's natural color, it grew black and putrified. The fourth was upon the back of his left hand, the bigneſs almoſt of four fingers, with the cutting of the veins, arteries, nervs, and part of the bones of that part; whence it is, that hee will bee lame of that hand, howſoever carefully and diligently healed. Another in the hurts of divers parts.

Now becauſ by hurting the ſpinal marrow, men becom lame, ſomtimes of a leg; it is fit you know that the ſpinal marrow deſcend's from the brain like a rivelet for the diſtribution of the nervs, who might diſtribute ſenſ and motion to all the parts under the head; wherefore if by hurting the ſpinal marrow, the patient's arms or hands are reſolved or numb, or wholly without ſenſ, it is a ſign theſe nervs are hurt which com forth of the fifth, ſixth, ſeventh *vertebræ* of the neck. But if the ſame accidents happen to the thigh, leg or foot with refrigeration, ſo that the excrements flow voluntarily, without the patient's knowledg, or elſ are totally ſuppreſt, it is a ſign that the ſinews which proceed from the *vertebræ* of the loins and holie-bone are hurt, or in fault; ſo that the animal-facultie beſtowing ſenſ and motion upon the whole bodie, and the benefit of opening and ſhutting to the ſphincter-muſcle of the bladder and fundament, cannot ſhew it's ſelf in theſe parts, by which means ſudden death happen's, eſpecially if there bee difficultie of breathing therewith.

Beeing to make report of a childe killed with the mother, have a care that you make a diſcreet report, whether the childe were perfect in all the parts and members thereof, that the Judg may equally puniſh the autor thereof. For hee meriteth far greater puniſhment, who hath killed a childe perfectly ſhaped and made in all the members; that is, hee which hath killed a live-childe, then hee which hath killed an *Embryon*, that is, a certain concretion of the ſpermatick bodie. For *Moſes* puniſheth the former with death, as that hee ſhould give life for life, but the other with a pecuniarie mulct. But I judg it fit to exemplifie this report by a Preſident. A caution in making report of a woman with childe beeing killed

I *A.P.* By the Judges command viſited Miſtris *Margaret Ulmarie*, whom I found ſick in bed, having a ſtrong fever upon her, with a convulſion and efflux of blood out of her womb, by reaſon of a wound in her lower bellie, below her navil on the right ſide, penetrating into the capacitie of her bellie, and the wound therein; whence it hath com to paſs, that ſhee was delivered before her time of a male childe, perfect in all his members but dead, beeing killed by the ſame wound, piercing through his ſcull into the marrow of the brain. Which in a ſhort time will bee the death of the mother alſo. In teſtimonie whereof, I have put my hand and ſeal.

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*The manner how to Embalm the Dead.*

SHad determined to finiſh this my tedious work with the precedent Treatiſ of Reports; but a better thought came into my head, which was, to bring Man, whoſe cure I had undertaken, from his Infancie, to his End, and even to his Grave; ſo that nothing might bee here defective which the Surgeon might by his profeſſion, perform about man's bodie either alive, or dead. Verily there hath ſcarce ever been a Nation ſo barbarous, which hath not onely been careful for the Burial, but alſo for the Embalming or preſerving of their dead bodies. For the verie *Scythians*, who have ſeemed to exceed other Nations in barbarouſneſs and inhumanitie, have don this; for (according to *Herodotus*) the *Scythians* burie not the corps of their King, before that beeing embowelled and ſtuffed full of beaten Cypreſs, Frankinſenſ, the ſeeds of Perſlie, and Aniſ, hee bee alſo wrapped in ſear-cloths. The like care hath alſo poſſeſſed the mindes of the *Ethiopians*; for having disburdened the corps of their friends, of their intrals and fleſh, they plaſtered them over, and then having thus rough-caſt them, they painted them over with colors ſo to expreſs the dead to the life; they incloſed them The care of the *Scythians* in the Embalming their dead. The like care of the *Ethiopians*.

them thus adorned in a hollow pillar of glaſs, that thus incloſed they might bee ſeen and yet not annoie the ſpectators with their ſmell. Then were they kept the ſpace of a year, in the hands of their next kindred; who, during this ſpace, offered and ſacrificed to them. The year ended, they carried them forth of the cittie, and placed them about the walls each in his proper vault, as *Herodotus* affirm's. But this pious care of the dead, did far otherwiſe affect the *Egyptians*, then it did other nations. For they were ſo ſtudious to preſerv the memorie of their anceſtors, that they Embalmed their whole bodie with aromatick ointments, and ſet them in tranſlucent Urns, or glaſs-Cells in the more eminent and honored part of their houſes, that ſo they might have them daily in their ſight, and might bee as monuments, and inciters to ſtir them up to imitate their Father's and Grandſire's virtues. Beſides alſo the bodies thus embalmed with aromatick and balſamick ointments, were in ſtead of a moſt ſure pawn, ſo that if anie *Egyptian* had need of a great ſum of monie, they might eaſily procure it of ſuch as knew them and their neighbors, by pawning the dead bodie of ſom of their dead parents. For by this means the creditor was certain, that hee which pawned it would ſooner loſe his life, then break his promiſe. But if all things ſo unhappily ſucceeded with anie, ſo that through povertie hee could not fetch home his pawn again, but was forced to forgo it, hee was ſo infamous amongſt all men, during the reſt of his life, as one baniſhed, or forlorn; and loſing his freedom hee ſhall becom a ſervant, yea, ſcorned and reviled of all men, hee ſhould bee accounted unworthie to enjoie the light and ſocietie of men. And certainly the *Egyptians* underſtanding the life which wee here lead, to bee of ſhort continuance, compariſon beeing made with that which wee are to live after the ſeparation of the ſoul from the bodie, they were more negligent in building their houſes they dwelt in, but in rareing the pyramids which ſhould ſerv them in ſtead of ſepulcres, they were ſo beyond reaſon ſumptuous and magnificent, that for the building of one of theſe edifices ſo renowned over all the world, which King *Cheopes* begun, a hundred thouſand men were everie three months, for twentie years ſpace there kept at work: It was five furlongs, and beeing ſquare, each ſide was 800. foot long, and ſo much in height. Almoſt all the pieces of marble went to the building thereof, were thirtie foot long, engraven and carved with various workmanſhip, as *Herodotus* report's. But before the bodies were committed to theſe magnificent Sepulcres, they were carried to the Salters and Embalmers, who for that purpoſe had allowance of out of the publick ſtock. Theſe beſmeared them with Aromatick, and Balſamick ointments, and ſewed up the inciſions they made, then ſtrewed them over with ſalt, and then covered them with brine for 70. daies; which beeing exſpired, they waſhed them, beeing taken thence, and all the filth beeing taken off, they wrapped them in Cotton-cloths, glued together with a certain gum; then their kinſmen placed them thus ordered in a wooden Coffin carved like to a man. This was the ſacred and accuſtomed rite of Embalming and Burying dead bodies amongſt the *Egyptians* which were of the richer ſort. Our countrie-men the *French*, ſtirred up with the like deſire, embalm the bodies of their Kings and Nobles with ſpices and ſweet ointments. Which cuſtom they may ſeem piouſly and chriſtianly to have taken from the Old and New Teſtament, and the antient and laudable cuſtom of the Jews; for you may read in the New Teſtament that *Joſeph* bought a fine linnen-cloth, and *Nicodemus* brought a mixture of myrrh and Aloës about 100. pound weight, that they might embalm and burie the bodie of *Jeſus Chriſt* our Saviour, for a ſign and argument of the renovation and future integritie which they hoped for by the reſurrection of the dead. Which thing the Jews had received by tradition from their anceſtors. For *Joſeph* in the old Teſtament commanded his Phyſicians, they ſhould embalm the dead bodie of his father with ſpices.

Lib. 3. Of the *Egyptians.*

The reaſon of building the *Egyptians* Pyramids.

Lib. 2.

John 19. 39.

Gen. 50. 2.

The manner of embalming for a long continuance.

But the bodie which is to bee embalmed with ſpices for verie long continuance muſt firſt of all bee embowelled, keeping the heart apart, that it may bee embalmed and kept as the kinsfolks ſhall think fit. Alſo the brain, the ſcull beeing divided with a ſaw, ſhall bee taken out. Then ſhall you make deep inciſions along the arms, thighs, legs, back, loins and buttocks, eſpecially where the greater veins and arteries run, firſt that by this means the blood may bee preſſed forth, which otherwiſe would putreſie and give occaſion and beginning to putrefaction to the reſt of the bodie; and then that there may bee ſpace to put in the aromatick powders; the whole bodie ſhall bee waſhed over with a ſpunge dipped in *aqua vitæ*, and ſtong vineger, wherein ſhall bee boiled wormwood, aloës, coloquintida, common ſalt and alum. Then theſe inciſions, and all the paſſages and open places of the bodie, and the three bellies ſhall bee ſtuffed with the following ſpices groſly powdered. R. *pul. roſar. chamæm. melil. balſami, menthæ, anethi, ſalviæ, lavend. roriſmar. marjoran. thymi, abſinthii, cyperi, calami aromat. gentianæ, ireos florent. aſſæ odoratæ, caryophyll. nucis moſchat, cinnamomi, ſtyracis, calamitæ. benjoini. myrrhæ, aloës, ſantal. omnium quod ſufficit.* Let the inciſions bee ſowed up and the open ſpaces that nothing fall out; then forthwith let the whole bodie bee annointed with Turpentine diſſolved with oil of Roſes and Camomil, adding, if you ſhall think it fit, ſom Chymical oils of ſpices, and then let it bee again ſtrewed over with the fore-mentioned powder; then wrap it in a linnen-cloth, and then in ſear-cloths.

How to embalm bodies when as wee want ſpices.

Laſtly, let it bee put in a Coffin of Lead, ſure ſoudered and filled up with drie ſweet herbs. But if there bee no plentie of the fore-mentioned ſpices, as it uſually happen's in beſieged towns, the Surgeon ſhall bee contented with the powder of quenched lime, common aſhes made of oke-wood.

For

For thus the bodie beeing over and above waſhed in ſtrong vinegar, or Lee, ſhall bee kept a long time, if ſo bee that a great diſſolving heat do not bear ſwaie, or if it bee not put in a hot and moiſt place. And this condition of time and place is the cauſ why the dead bodies of Princes and Kings, though embalmed with Art and coſt, within the ſpace of ſix or ſeven daies, in which they are kept to bee ſhewed to the people after their embalming, do caſt forth ſo greevous a ſent, that none can indure it; ſo that they are forced to bee put in a leaden Coffin. For the air which incompaſſeth them groweth ſo hot by reaſon of the multitude of people flowing to the ſpectacle, and the burning of lights night and daie, that the ſmall portion of the native heat which remaineth beeing diſſipated, they eaſily putrefie, eſpecially when as they are not firſt moiſtened and macerated in the liquor of aromatick things, as the *Ægyptians* antiently uſed to do, ſteeping them in brine for 70 daies, as I formerly told you out of *Herodotus*. I put in minde hereby, uſe, that ſo the embalming may becom the more durable, to ſteep the bodies (beeing embowelled, and pricked all over with ſharp bodkins, that ſo the liquor hindering putrefaction may penetrate the deeper into them) in a wooden tub filled with ſtrong vinegar of the decoction of aromatick and bitter things, as Alöes, Rue, Wormwood, and Coloquintida; and there keep them for twentie daies, pouring thereinto eleven or twelv pintes of *Aqua vitæ*. Then taking it forth, and ſetting it on the feet, I keep it in a clear and drie place. I have at home the bodie of one that was hanged, which I begged of the Sheriff, embalmed after this manner, which remaine's ſound for more then 25 yeers, ſo that you may tell all the muſcles of the right ſide, (which I have cut up even to their heads, and plucked them from thoſe that are next them for diſtinction's ſake, that ſo I may view them with my eies, and handle them with my hands as often as I pleaſ, that by renuing my memorie I may work more certainly and ſurely, when as I have anie more curious operation to bee performed) the left ſide remain's whole, and the Lungs Heart, *Diaphragma*, ſtomach, ſplene, kidnies, beard, haiers, yea and the nails, which beeing pared, I have often obſerved to grow again to their former bigneſs.

Why the bodies of our Princes, how well ſoever embalmed, corrupt in a few daies.

And let this bee the bound of this our immenſ labor's and by God's favor, our reſt, to whom Almightie, all-powerful, immortal and inviſible, bee aſcribed all honor and glorie for ever, and ever, *Amen*.

*Labor improbus omnia vincit.*

The end of the Treatiſ of reports, and embalming the dead.

# The Apologie and Treatiſ, conteining the voiages made into divers places. By *Ambroſe Pare* of *Laval* in *Maine*, Counſellor and chief Chirugion to the King.

## The twentie ninth Book.

Of what the Adverſarie accuſeth the Antor.

TRuely I had not put my hand to the pen, to write on ſuch a thing, were it not that ſom have impudently injured, taxed, and more through particular hatred, diſgraced mee, then for zeal or love they bear to the publick good; which was, concerning my manner of tying the Veins and Arteries, writing thus as followeth.

The words of the Adverſaric.

*Malè igitur & nimiùm arroganter inconſultus & temerarius quidam, vaſorum uſtionem poſt emortui membri reſectionem à veteribus omnibus plurimùm commendatam & ſemper probatam damnare auſus eſt, novum quendam deligandi vaſa modum, contra veteres omnes medicos ſine ratione, experientiâ & judicio docere cupiens, nec animadvertit majora multò pericula ex ipſa vaſorum deligatione quam acu partem ſanam profundè tranſfigendo adminiſtrari vult, imminere quàm ex ipſa uſtione. Nam ſi acu nervoſam aliquam partem, vel nervum ipſum pupugerit, dum ità novo & inuſitato modo venam abſurdè conatur conſtringere, nova inflammatio neceſſariò conſequetur, à qua Convulſio & convulſione cita mors. Quorum ſymptomatum metu Galenus non ante tranſverſa vulnera ſuere audebat (quod tamen minùs erat periculoſum) quàm muſculorum aponeuroſes denudâſſet. Adde quòd forcipes quibus poſt ſectionem iterum carnem dilacerat, cùm retracta verſùs originem vaſa ſe poſſe extrahere ſomniat, non minorem adferant dolorem quàm ignita ferramenta admota. Quod ſi quis laniatum expertus incolumis evaſerit, is Deo optimo maximo, cujus Beneficentiâ crudelitae iſta & carnificinâ liberatus eſt, maximas gratias habere & ſemper agere debet*; which is thus: Ill then, and too arrogantly a certain indiſcreet and raſh perſon would blame and condemn the cauterizing of veſſels after the amputation of a rotten and corrupted member, much praiſed and commended and alwaies approved by the Antients; deſiring to ſhew and teach us without reaſon, judgment, and experience, a new waie to tie the veſſels, againſt the opinion

of the Antient Phyſicians, taking no heed, nor beeing well adviſed, that there happen's far greater perils, and accidents, through this new waie of tying the veſſels (which hee will have to bee made with a needle, piercing deeply the ſound part) then by the burning and uſtion of the ſaid veſſels; for if the needle ſhall prick anie nervous part, yea the nerv it ſelf, when hee ſhall by this new and unaccuſtomed waie abſurdly conſtrein the vein by bindeing it, there muſt neceſſarily follow a new inflammation; from an inflammation, a convulſion; from a convulſion, death: for fear of which accidents, *Galen* never durſt ſtitch tranſverſal wounds, (which notwithſtanding were leſs dangereus) before hee had diſcovered the Aponeuroſes of the muſcles. Moreover the pincers with which, after the ſection, the fleſh is again dilacerated, while hee think's to draw the veſſels out which are drawn in toward their original, bring no leſs pain then the cautering irons do. And if anie one having experimented this new manner of crueltie have eſcaped danger, hee ought to render thanks to Almightie God for ever, through whoſe goodneſs hee hath been free'd from ſuch tyrannie, feeling rather his executioner then his methodical Chirurgion.

The Autors anſwer. O what ſweet words are here for one, who is ſaid to bee a wiſe and learned Doctor? hee remember's not that his white beard admoniſheth him, not to ſpeak anie thing unworthie of his age, and that hee ought to put off and drive out of him all envie and rancor conceived againſt his neighbor. So now I will prove by autoritie, reaſon and experience, that the ſaid Veins and Arteries ought to bee tied.

*Autorities.*

AS for Autorities, I will com to that of that worthie man *Hippocrates*, who wil's and command' the cure of Fiſtula's in the fundament by ligature, as well to conſume the calloſitie, as to avoid hemorragie. In the book of Fiſtula's of the fundament chap. 3. book. 5. leaf 4.

*Galen*, Treatiſ 2. chap. 17. in his method, ſpeaking of a flux of blood made by an outward cauſ, of whom ſee here the words, It is (ſaith hee) moſt ſure to tie the root of the veſſel, which I underſtand to bee that which is moſt near to the Liver, or the heart.

*Avicen*, Treatiſ 3. doct. 1. chap. 3. command's to tie the vein and the Arterie, after it is diſcovered towards his original.

*Guido* of *Cauliac*, ſpeaking of the wounds of the Veins and Arteries, injoineth the Chirurgion to make the ligature in the veſſel.

Maſter *Hollier* in the 3. book, chap. 4. of the matter of Chirurgerie, ſpeaking of a flux of blood, command's expreſſly to tie the veſſels.

*Calmetheus* in the 12. chap. of the wounds in the Veins and Arteries, tel's a moſt ſure waie to ſtaie a flux of blood, by ligature of the veſſel.

*Celſus*, chap. 26. book 5. from whom the ſaid Phyſician hath ſnatched the moſt part of his book, chargeth expreſly, to tie the veſſels in a flux of blood happening to wounds, as a remedie moſt eaſie & moſt ſure.

*Veſalius* in his Chirurgerie, chap. 4 book 3. willeth that the veſſels bee tied in a flux of blood.

*John de Vigo*, book 1. treatiſ 1. treating of a hemorragie in bleeding wounds, command's to tie the Vein, and the Arterie.

*Tegaultius* chap. 12. book 2. treating of the means to ſtaie the flux of blood, command's to pinch the Vein or Arterie with a Crow or Parrat's-bill, then to tie it with a verie ſtrong thred.

*Peter* of *Argillata* of *Bullongne*, treatiſ 4. chap. 11. book. 1. diſcourſing of a flux of blood, and the means to ſtop it, giveth a fourth waie expreſſly, which is made by ligature of the veſſels.

*John Andreas a Cruce*, a *Venetian*, book 1. ſect. 3. chap. 16. pag. 5. upon the 88. chap. of the book of *Paul* make's mention of a method, to ſtaie a flux of blood by the ligature of the veſſels.

*D' Alechamp* command's to tie the Veins and Arteries.

See then (my little good man) the autorities which command you to tie the veſſels. As for the reaſons, I will debate of them.

The hemorragie (ſaie you) is not ſo much to bee feared in the ſection of the Call, as that of the Varices, and the inciſion of the temporal Arteries, as after the amputation of a member. Now you your ſelf command that in cutting the Varices, the flux of blood bee ſtopped by the ligature of the veſſels. in the book 2. chap. of Angealogie, leaf 176. You command the ſame in the book of Stitches 1. chap. ſpeaking of the ſtitch, with the amputation and ſection of the Call, changed by the outward air, ſee heer your own words: After that muſt bee conſidered concerning the Call: for if there bee anie part corrupted, putrified, withered, or blackiſh: Firſt having tied, for fear of a flux of blood, you do not bid afterward to have it cauteriſed; but to ſaie the truth, you have your eies ſhut, and all your ſenſes dulled, when you would ſpeak againſt ſo ſure a method, and that it is not but through anger, and an ill will. For there is nothing which hath more power to drive reaſon from her ſeat, then choler and anger. Moreover when one come's to cauteriſe and diſmember the parts, oftentimes when the Eſchar come's to fal off, there happen's a new flux of blood: As I have ſeen divers times, not having yet been inſpired by God, with ſo ſure a means then, when I uſed the heat of fire. Which if you have not found, or underſtood this method in the books of the Antients, you ought not thus to tread it under your feet, and ſpeak unluckely of one who all his life hath preferred the profit of the Common-wealth before his own particular. It is not more then reaſonable to bee founded upon the ſaying of *Hippocrates*; in the chapter of burning, 2. book leaf 206. upon whoſe autoritie you ſerv your ſelf, which is thus That what the medicament cureth not the iron doth, and what the iron doth not amend, the fire exterminateth: It is a thing which ſavor's not of a Chriſtian, to fall to burning at the firſt daſh without ſtaying for anie more gentle remedies. As you your ſelf write, in the firſt book leaf 5. ſpeaking of the conditions required in a Chirurgion to cure well; which paſſage you borrow from ſom other place: for that which may bee don gently without fire, is much more commended then otherwiſe. Is it not a thing which all ſchools hold as a Maxim, that wee

muſt

*Galen* in 4. book of the *Meth.* and in the book of Art of *Hippocrates Apho.* the 2. book. 1. must alvvaies begin vvith moſt eaſie remedies, vvhich if they bee not ſufficient, vvee muſt then com to extreme, followving the doctrine of *Hippocrates*? *Galen* command's in the place before alledged, to treat or dreſs the diſeaſed quickly, ſafely, and with the leaſt pain that is poſſible. In the book of *arte panva.* *Let us com to Reaſon.*

NOvv ſo it is, that one cannot applie hot irons but vvith extreme and vehement pain in a ſenſible part void of a Gangrene, vvhich vvould bee cauſe of a Convulſion, Fever, yea oft-times of Death. Moreover it vvould bee a long vvhile aftervvards before the poor patients vvere cured, becauſe that by the action of the fire there is made an eſchar, vvhich proceed's from the ſubject fleſh, vvhich beeing fallen, nature muſt regenerate a nevv fleſh in ſtead of that vvhich hath been burned; as alſo the bone remain's diſcovered and bare; and by this means, for the moſt part there remain's an ulcer incurable. Moreover there is yet another accident. It happeneth that oftentimes the cruſt beeing faln off, the fleſh not beeing vvell renued, the blood iſſueth out as it did before. But vvhen they ſhall bee tied, the ligature fal's not off until the firſt fleſh have verie vvell covered them again: vvhich is proved by *Galen* in the 5. book of his *Meth.* ſaying, that eſcharotick medicines vvhich cauſe a cruſt or eſchar, vvhenſoever they fall off, leav the part more bare then the natural habit require's. For the generation of a cruſt proceed's from the parts ſubject, and which are ſituate round about it, beeing alſo burned, as I may ſaie: wherefore by how much the part is burnt, by ſo much it loſeth the natural heat. Then tell mee when it is neceſſarie to uſe eſcarotick medicines, or cautering irons? 'T is when the flux of blood is cauſſed by eroſion, or ſom Gangrene or putrefaction. Now is it thus? In freſh bleeding wounds there is neither Gangrene, nor putrefaction. Therefore, the cauteries ought not to bee there applied. And when the Antients commanded to applie hot irons to the mouths of the veſſels, it hath not been onely to ſtaie the flux of blood, but chiefly to correct the malignitie, or gangrenous putrefaction which might ſpoil the neighboring parts. And it muſt bee here noted, that if I had known ſuch accidents to happen, which you have declared in your book, in drawing and tying the veſſels, I had never been twice deceived; nor would I ever have left by my writings to poſteritie, ſuch a waie of ſtopping a flux of blood. But I writ it after I had ſeen it don & did it verie often, with happie ſucceſs. See then what may happen through your inconſiderate counſel, without examining, or ſtanding upon the facilitie of tying the ſaid veſſels. For ſee, heer's your ſcope and propoſition, to tie the veſſels after amputation is a new remedie, ſaie you; then it muſt not bee uſed, it is an ill argument for a Doctor.

Of what the eſchar is made. Words of the adverſarie. Propoſitions of the Adverſarie.

But as for that (ſaie you) one muſt uſe fire after the amputation of members, to conſume and drie the putrefaction, which is a common thing in Gangrenes, and mortifications, that indeed hath no place here, becauſe the practice is to amputate the part above that which is mortified, and corrupted; as *Celſus* write's and command's, to make the amputation upon the ſecond part, rather then to leav anie whit of the corrupted. I would willingly ask you, if when a vein is cut tranſverſ, and that it is verie much retracted towards the original, whether you would make no conſcience to burn till that you had found the orifice of the vein, or arterie; and if it bee not more eaſie onely with a Crow-bil to pinch and draw the veſſel, and ſo tie it? In which you may openly ſhew your ignorance, and that you have your minde ſeazed with much rancor and choler. Wee dailie ſee the ligature of the veſſels practiſed with happie ſucceſs after the amputation of a part, which I will now verifie by experiences and hiſtories, of thoſe to whom the ſaid ligature hath been made, and perſons yet living.

In 5. book c. 26. and 7. book c. 33. In the ch. of cutting. book the 2.

*Experiences.* A notable hiſtorie.

THe 16. of *June* 1582. in the preſence of M. *John Liebaud* doctor in the facultie of Phyſick at *Paris*, *Claud Viard* ſworn Surgeon, M. *Mathurin Huron*, Surgeon of Monſieur *de Souvray*, and I, *John Charbonel* M. Barber-Surgeon of *Paris*, well underſtanding the *Theorick*, and *Practick* of Surgerie, did with good dexteritie amputate the left leg of a woman tormented the ſpace of three years with extreme pain, by reaſon of a great *Caries* which was in the bone *Aſtragal*, *Cyboides*, great and little *focil*, and through all the nervous parts, through which ſhee felt extreme and intolerable pains night and daie: ſhee is called *Marie* of *Hoſtel*, aged 28. years, or thereabouts, wife of *Peter Herve*. Eſquire of the Kitchin to the Ladie *Ducheſs* of *Uzez*, dwelling in the ſtreet of *Verbois* on the other ſide S. *Martin* in the fields, dwelling at the ſign of the S. *John*'s-head; where the ſaid *Charbonel* cut off the ſaid leg, the bredth of 4. large fingers below the knee, & after that hee had inciſed the fleſh, & ſawed the bone, hee griped the vein with the Crow-bil, then the Arterie, then tied them; from whence I proteſt to God (which the companie that were there, can witneſs) that in all the operation that was ſuddenly don, there was not ſpilt one porrenger of blood; and I bid the ſaid *Charbonel* to let it bleed more, following the precept of *Hippocrates*, that it is good, in all wounds and alſo in inveterate ulcers, to let the blood run; by this means, the part is leſs ſubject to inflammation. The ſaid *Charbonel* continued the dreſſing of her, who was cured in two months, without anie flux of blood happening unto her, or other ill accident; and ſhee went to ſee you at your lodging beeing perfectly cured.

The operation of *Charbonel*. In the 7. ſent. of the book of Ulcers.

Another Hiſtorie. Operation don by Viard.

Another hiſtorie of late memorie, of a ſinging-man of our Ladie's Church named M. *Colt*, who broke both the bones of his leg which were cruſht in divers pieces, inſomuch that there was no hope of cure, to vvithſtand a gangrene and mortification, and by conſequence death. Monſieur *Helin* Doctor Regent in the facultie of Phyſick, a man of honor and good knovvledg, *Claud Viard*, & *Simon Peter*, ſvvorn Surgeons of *Paris*, men vvell exerciſed in Surgerie; and *Balthazar* of *Leſtre*, and *Leonard de Leſchenal*, M. Barber-Surgeons, vvell experimented in the operations of Surgerie, vvere all of opinion, to vvithſtand the accidents aforeſaid, to make entire amputation of the vvhole leg, a little above the broken & ſhivered bones & the torn nervs, veins, arterie,; the operation was nimbly don, by the ſaid *Viard* and the blood ſtanch't by the ligature of the veſſels in the preſence of the ſaid *Helin*, and M. *Tonſard* great vicar of our Ladie's Church, and was continually dreſt by the ſaid *Leſchenal*, and I went to ſee him otherwhiles; hee was happily cured without the application of hot irons, and walketh luſtily on a wooden leg.

Another Hiſtorie. IN the year 1583. the 10. daie of *December*, *Touſſaint Poſſon* born at *Ronieville*, at this preſent dwelling at *Beauvais* near *Dourdan*, having his legg all ulcered, and all the bones cariez'd and rotten, praied mee for the honor of God to cut off his leg by reaſon of the great pain which hee could no longer endure. After his bodie was prepared, I cauſſed his leg to bee cut off, four fingers below the *rotula* of the knee, by *Daniel Powlet* one of my ſervants, to teach him and to imbolden him in ſuch works; and there hee readily tied the veſſels to ſtaie the bleeding, without application of hot irons, in the preſence of *James Gulilemeau* ordinarie Surgeon to the King, and *John Charbonell* maſter-Surgeon of *Paris*: and during the cure was viſited by M. *Laffile* and M *Courtin* Doctors, Regents in the facultie of medicine at *Paris*. The ſaid operation was made in the houſ of *John Gobel* Inn-keeper, dwelling at the ſign of the white-horſ in the Greve. I will not here forget to ſaie, that the Ladie Princeſs of *Montpenſier*, knowing that hee was poor, and in my hands, gave him monie to paie for his chamber and diet. Hee was well cured, God bee praiſed, and is returned home to his houſ with a woodden-leg.

Another Hiſtorie. Gangreen happening by an Antecedent cauſ. A Gangreen happened to half of the leg to one named *Nicolas Meſnager* aged 76. years, dwelling in S. *Honores* ſtreet, at the ſign of the Basket; which happened to him through an inward cauſ, ſo that wee were conſtrained to cut off his leg to ſave his life: and it was taken off by *Antonie Renaud*, maſter Barber-Surgeon of *Paris* the 16. daie of *December* 1583. in the preſence of M. *Le Fort*, and M *La Noüe* ſworn Surgeons of *Paris*; and the blood was ſtanched by the Ligature of the veſſels, and hee is at this preſent cured and in health, walking with a wooden-leg.

Another Hiſtorie. A Water.man at the Port of *Neſle*, dwelling near *Monſieur de Mas*, Poſt-maſter, named *John Bouſſereau*, in whoſe hands a Musket brake aſunder, which broke the bones of his head, and rent and tore the other parts in ſuch ſort that it was needful and neceſſarie to make amputation of the hand two fingers above the wriſt: which was don by *James Guillemau* then Surgeon in ordinarie to the King, who dwelt at that time with mee. The operation likewiſe beeing readily don, and the blood ſtanch'd by the Ligature of the veſſels without burning irons, hee is at this preſent living.

Operation don by *Guillemau*.

Another Hiſtorie. Operation don by the Antor. A Merchant Grocer dwelling in S. *Denis*-ſtreet at the ſign of the great *Tournois* named the Judg, who fell upon his head, where was made a wound near the temporal muſcle, where hee had an arterie opened, from whence iſſued forth blood with great impetuoſitie, inſomuch that common remedies would not ſerv the turn; I was called thither, where I found M. *Raſſe*, M. *Cointeret*, M. *Viard*, ſworn Surgeons of *Paris*, to ſtaie blood; where preſently I took a needle and thred, and tied the arterie, and it bled no more after that, and was quicklie cured. M. *Rouſſelet* can witneſs it, not long ſince Deacon of your Facultie, who was in the cure with us.

Another Hiſtorie. Another operation. A Sergeant of the Chaſtlet dwelling near S. *Andrew des Arts*, who had a ſtroak of a ſword upon the throat in the Clacks medow, which cut aſunder the jugular vein extern, as ſoon as hee was hurt hee put his handkerchet upon the wound, and came to look mee at my houſ, and when hee took awaie his handkercher the blood leaped out with great impetuoſitie: I ſuddenly tied the vein toward the root; hee by this means was ſtanched and cured, thanks bee to God. And if one had followed your manner of ſtanching blood by cauteries, I leav it to bee ſuppoſed whether hee had been cured; I think hee had been dead in the hands of the operator. If I would recite all thoſe whoſe veſſels were tied to ſtaie the blood which have been cured, I ſhould not have ended this long time; ſo that mee thinks there are Hrſtories enough recited to make you believ the blood of veins and arteries is ſurely ſtanched without applying anie outward cauteries.

Du Bartas. *Hee that doth ſtrive againſt experience,*
*Daign's not to talk of anie learned ſcience.*

Book 6.c.45. book 2.c.4. book 3. c. 9. ſect.7. NOw my little maſter, ſeeing that you reproch mee that I have not written all the operations of Surgerie in my works which the Ancients write of, I ſhould bee verie ſorrie for it: for then indeed might you juſtly call mee *Carnifex*. I have left them becauſ they are too cruel, and am willing to follow the moderns, who have moderated ſuch crueltie: which notwithſtanding you have followed ſtep by ſtep, as appeareth by the operations here written, extracted from your book, which you have drawn here and there from certain ancient Autors, ſuch as followv, and ſuch as you have never practiſed nor ſeen.

*The firſt operation.*

In the 2 book of the chapter of *Hypoſtaſm*, book 14 ch. laſt of the Meth. In the 4 ch. of the 16 book of my work. Book 6.c.7. Book 2.c.5. TO inveterate fluxions of the eies, and Migrimes, *Paulus Ægineta* as alſo *Albucaſis* command to make *Arteriotomie*, ſee here the vvords of the ſame *Æginete*. You mark the Arteries vvhich are behind the ears, then divide them in cutting to the verie bone, and make a great inciſion the bredth of tvvo fingers, even till the Arterie bee found, as you command to bee don in your book; but I holding the opinion of *Galen*, vvho command's to dreſs the diſeaſed quickly, ſafely, and vvith the leaſt pain that is poſſible, I teach the young Surgeon the means to remedie ſuch evils in opening the Arteries behinde the ears, & thoſe of the temples, vvith one onely inciſion, as a letting blood, and not to make a great inciſion, & cut out vvork for a long time.

*The ſecond.*

In the 2. book chap. of *Periſcythiſm*. TO fluxions which are made a long time upon the eies, *Paul Ægenete* and *Albucaſis* command to make inciſion which they call *Periſcethiſmos* or *Augiologie* of the Greeks; and ſee heer the words of *Paul*; In this operation firſt the head is ſhaved, then taking heed of touching the temporal muſcles, a tranſverſ inciſion muſt bee made, beginning at the left temple and finiſhing at the right, which you have put in your book word for word, without changing anie thing: Which ſheweth openly you are a right wound-maker; as may bee ſeen in the Chapter which you call the Crown cut, which is made half round under the Coronal ſuture from one temple to another even to the bone. Now I do not teach ſuch a cruel kinde of remedie, but inſtruct the operator by reaſon, autoritie and notable proof of a ſure and certain waie to remedie ſuch affecti-

In the 16 ch. book

...out butchering men in this kinde.

In

The third. Book 6.ch.44 book 2.ch. 3. book 3.ch.22

IN the cure of *Empyema*, *Paul Æginet*, *Albucraſis* and *Celſus* commanded to applie ſom thirteen, others fifteen Cauteries to give iſſue to the matter conteined in the breſt, as the ſaid *Celſus* in the afore-ſaid place appointeth for Aſthmatick people, which is a thing out of all reaſon (which reſpect to their honor bee it ſpoken) that ſince the Surgeon's ſcope is to give iſſue to the matter therein conteined, there is no other queſtion then to make apertion, to evacuate the matter in the moſt inferiour part, I have ſhewed the young Surgeon the means to do it ſafely, without tormenting the patients for nothing.

The fourth. *Guido* of *Cauliac* the 2. treatiſ. Doct. 1. chap. 1. Book 7. chap. 10. book 6. chap. 46. book 2. chap. 47.

IN Paps that are too great, *Paul Æginet* and *Albucraſis* command's to make a croſs-inciſion, to take out all the fat, and then join together the wound by ſtitch: in brief, it is to flea a man alive, which I have never practiſed, nor counſel it to bee don by the young Surgeon.

The fifth. In the firſt book, chap. 29. and 30. alſo in book 2. chap. 32. book 6. chap. 47. and 48.

*Albucraſis* and *Paul Æginet* will cauterize the Liver and the Splene with hot irons, which the moderns have never practiced; for indeed reaſon is manifeſtly repugnant thereunto.

The ſixth. In the 5. book chap. 1. *De interanis morbis.* book 1. chap. 33. book 3. ſect. 2. chap. 89. book 6. chap. 50 In the 3. book 12. ch. 67.

IN the *Paracenteſis* which is made in the third kinde of Dropſie called *Aſcites*, *Celius Aurelianus* commandeth divers apertions to bee made in the bellie. *Albucraſis* applie's nine actual cauteries, that is to ſaie, four about the Navel, one upon the Stomach, one upon the Splene, one upon the Liver, two behinde the ſpondyls, one of them near the breſt, the laſt near the ſtomach. *Ætius* is likewiſe of the ſame opinion, to open the bellie with divers cauteries. *Paul Æginet* command's to applie five actual cauteries to make the ſaid *Paracenteſis*. But abhorring ſuch a kinde of burning, of which you ſpeak much in your third book, I ſhew another kinde of practice, the which is don by making a ſimple inciſion in the ſaid bellie, as may bee ſeen in my works, with happie ſucceſs. I do not teach young men in my works the manner of burning, which the Antients have called *infibulare*, that is not in practice though *Celſus* writeth of it.

The ſeventh. In the 7. book c. 25. book 6. c. 76. book 2. c. 72. upon the ſentence 49. of the 1. ſection of the book of Arts.

IN the Sciatick proceeding from an internal cauſ and becauſ the viſcous humors diſplace the bones, *Paul* command's to burn or cauterize the ſaid joint to the bone: *Diaſcorides* command's the ſame, Which I do not find expedient, taking indication from the ſubjacent parts: for there where one would burn, 'tis in the place of four twin-muſcles, under which paſſeth the great Nerv deſcending from the Holie-bone; which beeing burnt, I leav it to your cenſure what might happen, as *Galen* remarketh ſpeaking of the *uſtion* which muſt bee made in the ſhoulders called *humerus*.

The eighth. Sentence the 22 and 23. of the 3. ſection of the book of the joints c. 16. of the 15. book.

IN the outward laxation of the Spondyls, *Hippocrates* command's to binde the man right upon a Ladder, the Arms and Legs tied and bound: then afterwards having raiſed the Ladder to the top of a tower, or the ridg of an houſ, with a great rope in a pullie, then to let the patient fall plumb down upon the hard pavement; which *Hippocrates* ſaie's was don in his time. But I do not ſhew of anie ſuch waie of giving the ſtrapado to men, but I ſhew the Surgeon, in my works, the waie to reduce them ſurely, and without great pain. Moreover I ſhould bee ſorrie to follow the ſaying of the ſaid *Hippocrates*, in the third book *De morbis*, who command's in the diſeaſ called *Volvulus* to cauſ the bellie to bee blown with a pair of bellows, putting the noſel of them into the *inteſtinum rectum*, and then blow there till the bellie bee much ſtretcht, afterwards to give an emollient glyſter, and to ſtop the fundament with a ſponge. Such practice as this is not made now a daies, therefore wonder not if I have not ſpoken of it. And you not beeing contented to patch together the operations of the above-ſaid Autors, you have alſo taken divers in my works, as everie man may know: which ſheweth manifeſtly that there is nothing of your own in your Surgeon's Guide. I leav out divers other unprofitable operations which you quote in your book, without knowing what beaſts they are, in never having ſeen them practiſed; but becauſ you have found them written in the books of the Antients, you have put them into your book.

Moreover you ſaie that you will teach me my leſſon in the operations of Surgerie, which I think you cannot do: becauſ I have not onely learned them in my ſtudie, and by the hearing of manie years the leſſons of Doctors of Phyſick: but as I have ſaid before in my epiſtle to the Reader, I was reſident the ſpace of 3. years in the Hoſpital of *Paris*, where I had the means to ſee and learn divers works of Surgerie, upon divers diſeaſes, together with the Anatomie, upon a great number of dead bodies, as oftentimes I have ſufficiently made trial publickly in the Phyſicians ſchool at *Paris*, and my good luck hath made mee ſeen much more. For beeing called to the ſervice of the King of France (four of which I have ſerved) I have been in companie at battels, skirmiſhes, aſſaults, and beſeiging of cities and fortreſſes; as alſo I have been ſhut up in cities with thoſe that have been beſieged, having charge to dreſs thoſe that were hurt. Alſo I have dwelt manie years in this great and famous cittie of *Paris*, where, thanks bee to God, I have lived in verie good reputation amongſt all men, and have not been eſteemed the leaſt in ranck of men of my profeſſion, ſeeing there was not anie cure, were it never ſo difficult and great, where my hand and my counſel have not been required, as I make it appear in this my work. Now dare you (theſe things beeing underſtood) ſaie you will teach mee to perform the works of Surgerie, ſince you never went further then your ſtudie? The operations of the ſame are four in general (as wee have declared heretofore) where you may make but three, that is to ſaie, join that which is ſeparated, ſeparate that which was conjoined, and to take awaie that which is ſuperfluous, and the fourth which I make, is as much neceſſarie as induſtrious invention, to add to nature that which is wanting, as I have ſhewed here above. Alſo it is your will that the Surgeon make but three operations above-ſaid without medling to ordain a ſimple Cataplaſm, ſaying it is that which com's to your part belonging to the Phyſician: And that the Antients (in the diſcourſ which you have made to the Reader) have divided the practice of Phyſick

into three kindes, that is to ſay, Diet, Medicine and Chirurgerie. But I would willingly demand of you who hath made the partition, and where anie thing ſhould bee don, who are thoſe which are content with their part, without anie enterprize upon the other? For *Hippocrates*, *Galen*, *Ætius*, *Avicen*, in brief, all the Phyſicians, as well Greeks and Latins as Arabians, have never ſo treated of the one, that they have not treated of the other, for the great affinitie and tie that there is between them two, and it ſhould bee verie difficult to do otherwiſe. Now when you will vilifie Chirurgerie ſo much, you ſpeak againſt your ſelf; for in your Epiſtle which you have dedicated to Monſieur of *Martignes*, you ſay, that Chirurgerie is the moſt noble part of Phyſick, as well by reaſon of the original antiquitie, neceſſitie, as certaintie in her actions; for ſhee work's *Luce apertâ*, as learnedly writeth *Celſus* in the beginning of his ſeventh book; therefore it is to bee believed you never went out of your ſtudie, but to teach *Theorick* (if you have been able to doe it.)

A fair ſimilitude. The operations of Chirurgerie are learnt by the eie, and by the touch. I will ſay that you much reſemble a yong Lad of low *Britanie*, of plump buttocks, where was ſtuff ſufficient; who demanded leav of his father to com to *Paris*, to take *France*; beeing arrived the Organiſt of our Ladies Church met with him at the Pallace-gate, who took him to blow the Organs, where hee was remaining three years: hee ſaw hee could ſomwhat ſpeak *French*, hee return's to his Father, and told him that hee ſpake good *French*, and moreover hee knew well, to plaie on the Organs: his father received him verie joifully, for that hee was ſo wiſe and learned in ſo ſhort a time. Hee went to the Organiſt of their great Church, and praied him to permit his ſon to plaie on the Organs, to the end hee might know whether his ſon was becom ſo skilful a maſter, as hee ſaid hee was; which the Organiſt agreed to verie willingly. Beeing entred to the Organs, hee caſt himſelf with a full leap to the bellows, the maſter Organiſt bid him plaie, and that hee would blow; then this good maſter anſwer's, Let him plaie himſelf on the organs if hee would for him, hee could do nothing but plaie on the bellows. I think alſo my little maſter, that you know nothing elſ, but to prattle in a chair; but I will plaie upon the keies, and make the Organs ſound (that is to ſay) I will do the operations of Chirurgerie, that which you cannot in anie wiſe doe, becauſ you have not gon from your ſtudie or the ſchools, as I have ſaid before. But alſo, as I have ſaid alreadie in the Epiſtle to the Reader, that the laborer doth little profit by talking of the ſeaſons, diſcourſ of the manner of tilling the earth, to ſhew what ſeeds are proper to each ſoil; all which is nothing if hee put not his hand to the Plough, and couple the Oxen together. So likewiſe is it no great matter if you do not know the *Practick*, for a man may execute Chirurgerie well, although hee have no tongue at all. As *Cornelius Celſus* hath verie well remarked in his firſt book when hee ſaith, *Morbos non eloquentiâ, ſed remediis curari: quæ ſi quis elinguis, uſu diſcretus bene nôrit, hunc aliquantò majorem medicum futurum, quàm ſi ſine uſu linguam ſuam excoluerit*; that is to ſay; Diſeaſes are not to bee cured by eloquence, but by remedies well and duely applied, which if anie wiſe and diſcreet man though hee have no tongue know well the uſe thereof, this man in time ſhall becom the greater Phyſician, than if without practiſe his tongue were dip't with oratorie; the which you your ſelf confeſs in your ſaid book by a Tetraſtick which is thus:

*To talk's not all in Chirurgions Art,*
*But working with the hands;*
*Aptly to dreſs each grieved part,*
*And guid, fire, knife, and bands.*

*Ariſtotle* in the firſt book of his Metaphyſicks the firſt chapter ſaith, Experience is almoſt like unto ſcience, and by the ſame, Art and ſcience have been invented. And indeed wee ſee theſe which are experimented, attain ſooner to that which they intend, then thoſe which have reaſon and not experience, becauſ that the ſaid experience is a knowledg of ſingular and particular things, and ſcience on the contrarie is a knowledg of things univerſal. Now that which is particular is more healable then that which is univerſal therefore thoſe which have experience are more wiſe and more eſteemed, then thoſe which want it, by reaſon they know what they do. Moreover I ſay, that ſcience without experience, bringeth no great aſſurance.

*Alciat* a Doctor of *Milan*, boaſted one daie of himſelf, that his glorie was greater and more famous then that of Counſellors, *Preſidents*, maſters of Requeſt: becauſ that it was by his ſcience, and his inſtructions that they became ſuch: but hee was anſwered by a Counſellor, that he was like unto a whetſtone, which made the knife ſharp and readie to cut, not beeing able ſo to do it ſelf, and alledged the verſes of *Horace* that;

*Fungebatur vice cotis, acutum*
*Reddere quæ ferrum valet, exors ipſa ſecandi.*

See you now (my little maſter) my anſwers to your calumniations, and pray you, if you bear a good minde (to the publick good) to review and correct your book, as ſoon as you can, and not to hold young Chirurgions in this error by the reading of the ſame, where you teach them to uſe hot irons after the amputation of members, to ſtaie a flux of blood, ſeeing there is another means, and not ſo cruel and more ſure and eaſie. Moreover if to daie after an aſſault of a Citie, where diverſ Souldiers have had arms and leggs broken, and ſhot off by Cannon-bullets, Cutlas and other inſtruments of war; to ſtaie the flux of blood, if you ſhould uſe hot irons, it would bee needful to have a forge, and much coals to heat them: and alſo the ſouldiers would hold you in ſuch horror for this crueltie, that they would kill you like a Calf, even as in times paſt they did one of the chiefeſt Chirurgions of *Rome*, which may bee found written before in the third chapter of the Introduction of Surgerie, the 1. book. Now leſt the Sectators of your writings ſhould fall into ſuch inconveniencie, I praie them to follow the method aforeſaid, the which I have ſhewed to bee true and certain, and approoved by autoritie, reaſon and experience.

The Voiage of Thurin, 1535. MOreover, I will here ſhew to the readers the places where I have had means to learn the Art of Surgerie. for the better inſtructing of the young Surgeon: and firſt in the year 1536. the great King *Francis* ſent a great Armie to *Thurin*, to recover the Cittie and Caſtles, which the Marqueſs of *Guaſt*, Lieutenant-General of the Emperor had taken: where the high Conſtable of *France* the great Maſter, was Lievtenant-General of the Armie, and Monſier *de Montain* Colonel-General of the Foot, of which I was then Surgeon. A great part of the Armie arrived in the Countrie of *Suze*; wee found the enemie which ſtopt the paſſage, and had made certain Forts, and Trenches, inſomuch that to hunt them out and make them leav the place, wee were forced to fight, where there were divers hurt and ſlain, as well of the one ſide as of the other: but the enemies were conſtrained to retire, and get into the Caſtle, which was cauſſed partly by one Captain *Ratt*, who climed with divers of the ſouldiers of his companie upon a little Mountain; there where hee ſhot directly upon the enemies, hee received a ſhot upon the ankle of his right foot, wherewith preſently hee fell to the ground; and ſaid then, Now is the *Rat* taken. I dreſſed him, and God healed him. Wee entred the throng in the Citie, and paſſed over the dead bodies, and ſom which were not yet dead, wee heard them crie under our horſe's-feet, which made my heart relent to hear them. And truly I repented to have forſaken *Paris* to ſee ſo pitiful a ſpectacle. Beeing in the Citie, I entred into a ſtable thinking to lodg my own, and my man's horſ, where I found four dead ſouldiers, and three which were leaning againſt the wall, their faces wholly disfigured, and neither ſaw nor heard, nor ſpoke: and their clothes did yet flame with gun-powder which had burnt them. Beholding them with pittie, there happened to com an old Souldier, who asked mee if there were anie poſſible means to cure them, I told him no: hee preſently approached to them, and cut their throats without choler. Seeing this great crueltie, I told him hee was a wicked man, hee anſwered mee that hee praied to God, that whenſoever hee ſhould bee in ſuch a caſe, that hee might finde ſom one that would doe as much to him, to the end that hee might not miſerably languiſh. And to return to our former diſcourſ, the enemie was ſummoned to render, which they ſoon did, and went out, their lives onely ſaved, with a white ſtaff in their hands; the greateſt part whereof went and got to the Caſtle of *Villane*, where there was about 200. Spaniards; Monſier the Conſtable would not leav them behinde, to the end that the waie might bee made free. This Caſtle is ſeated upon a little mountain, which gave great aſſurance to them within, that one could not plant the Ordnance to beat upon it, and were ſummoned to render, or that they ſhould bee cut in pieces; which they flatly refuſed, making anſwer, That they were as good and faithful ſervants to the Emperor, as Mounſier the Conſtable could bee to the King his maſter. Their anſwer heard, they made by force of arm, two great Cannons to bee mounted in the night with cords and ropes, by the Swiſſers and Lanſquenets; when as the ill luck would have it, the two Cannons beeing ſeated, a Gunner by great negligence ſet on fire a great bag of gun-powder; wherewith hee was burned together with ten or twelv ſouldiers; and moreover the flame of the powder was a cauſ of diſcovering the Artillerie, which made them, that all night they of the Caſtle did nothing but ſhoot at that place where they diſcovered the two pieces of Ordnance, wherewith they kil'd & hurt a great number of our people.

The retiring of the enemie.

Brave anſwer of the ſouldiers.

The next daie early in the morning a Batterie was made, which in a few hours made a breach, which beeing made, they demanded to parlie with us; but 'twas too late for them: For in the mean time our French foot ſeeing them amazed, mounted to the breach, and cut them all in pieces, except a fair young luſtie maid of *Piedmount*, which a great Lord would have kept and preſerved for him to keep him companie in the night, for fear of the greedie wolf. The Captain and Enſign were taken alive, but ſoon after were hanged upon the gate of the Cittie, to the end they might give example and fear to the Imperial ſouldiers not to bee ſo raſh and fooliſh, to bee willing to hold ſuch places againſt ſo great an Armie. Now all the ſaid ſouldiers of the Caſtle, ſeeing our people comming with a moſt violent furie, did all their endevour to defend themſelvs, they kil'd and hurt a great companie of our ſouldiers, with pikes, muskets, and ſtones, where the Surgeons had good ſtore of work cut out. Now at that time I was a freſh water ſouldier, I had not yet ſeen wounds made by gun-ſhot at the firſt dreſſing. It is true, I had read in *John de Vigo*, in the firſt book of Wounds in General, the eighth Chapter, that wounds made by weapons of fire did participate of Venenoſitie, by reaſon of the powder, and for their cure command's to cauterize them with oil of Elders ſcalding-hot, in which ſhould bee mingled a little treacle; and not to fail, before I would applie of the ſaid oil, knowing that ſuch a thing might bring to the patient great pain, I was willing to know firſt, before I applied it, how the other Surgeons did for the firſt dreſſing, which was to applie the ſaid oil the hotteſt that was poſſible into the wounds, with tents and ſetons; inſomuch that I took courage to do as they did. At laſt I wanted oil, and was conſtrained in ſtead thereof, to applie a digeſtive of yelks of eggs, oil of roſes, and turpentine. In the night I could not ſleep in quiet, fearing ſom default in not cauterizing, that I ſhould finde thoſe to whom I had not uſed the burning-oil dead impoiſoned; which made mee riſe verie earlie to viſit them, where beyond my expectation, I found thoſe to whom I had applied my digeſtive medicine, to feel little plain, and their wounds without inflammation or tumor, having reſted reaſonable well that night: the other to whom was uſed the ſaid burning-oil, I found them feveriſh, with great pain and tumor about the edges of their wounds. And then I reſolved with my ſelf, never ſo cruelly to burn poor men wounded with gun-ſhot. Beeing at *Thurin*, I found a Surgeon, who had the fame above all others, for the curing of wounds of gun-ſhot, into whoſe favor I found means to inſinuate my ſelf, to have the receit of his Balm, as hee called it wherewith hee dreſſed wounds of that kinde, and hee held mee of the ſpace of two years, before I could poſſible draw the Receit from him. In the end by gifts and preſents hee gave it mee, which was this, to boil young whelps newv pupped, in

Counſel of *de Vigo*.

Experience of a bold man's happie ſucceſs.

oil

Receit of an excellent balm for wounds with gun ſhot.

oil of Lilies, prepared earth-worms, with Turpentine of *Venice*. Then was I joiful and my heart made glad, that I had underſtood his remedie, which was like to that which I had obtained by great chance. See then how I have learned to dreſs wounds made with gun-ſhot, not by books. My Lord Marſhal of *Montian* remained Lieutenant-General for the King in *Piedmont*, having ten or twelv thouſand men in garriſon through the Citties and Caſtles, who often combated with ſwords and other weapons, as alſo with muskets; and if there were four hurt, I had alwaies three of them; and if there were queſtion of cutting off an arm or a leg, or to trepan, or to reduce a fracture or diſlocation, I brought it well to paſs. The ſaid Lord Marſhal ſent mee one while this waie, another while that waie, for to dreſs the appointed Souldiers which were beaten as well in other Citties as that of *Thurin*, inſomuch that I was alwaies in the Countrie one waie or other. Monſieur the Marſhal ſent for a Phyſician to *Milan*, who had no leſs reputation in the medicinal Art (then the diſeaſed Monſieur *le Grand*) to take him in hand for an hepatical flux, whereof at laſt hee died. This Phyſician was a certain while at *Thurin* to deal with him, and was often called to viſit the hurt people, where hee alwaies found mee, and I conſulted with him, and ſom other Surgeons, and when wee had reſolved to do anie ſerious work of Surgerie, 'twas *Ambroſe Pare* that put his hand thereto, where I did it promptly and with dexteritie, and with a great aſſurance, in ſo much that the ſaid Phyſician admired mee, to ſee mee ſo readie in the operation of Surgerie, ſeeing the ſmall age which I had. One daie diſcourſing with the ſaid Lord Marſhal, hee ſaid to him, *Signor tu, hai un Chirurgico giovane di anni, ma egli è vecchio di ſapere è di eſperientia. Guardæ lo bene, perche egli ti fara ſervicio & honore.* That is to ſaie, Thou haſt a young Surgeon of age, but hee is old in knowledg and experience, preſerv him well, for hee will do thee ſervice and honor. But the old man knew not that I had dwelt three years in the Hoſpital of *Paris*, there to dreſs the diſeaſed. In the end Monſieur *Marſhal* died with his hepatical flux. Beeing dead, the King ſent Monſieur the Marſhal of *Annebaut* to bee in his place, who did mee this honor to praie mee to dwell with him, and that hee would uſe mee as well or better, then Monſieur the Marſhal *Montian*; which I would not do for the grief I had for the loſs of my maſter who loved mee intimately, and I him in the like manner; and ſo I came back to *Paris*.

Witneſs of the dexteritie of the Autor

The death of Marſhal *Montian*.

The Voiage of Marolle and of low Britanie, 1543.

I Went to the Camp of *Marolle*, with the deceaſed Monſieur *de Roban*, where King *Francis* was in perſon; and I was Surgeon of the companie of the ſaid Monſieur *de Roban*. Now the King was advertiſed by Monſieur *de Eſtampes*, governor of *Britanie*, that the *Engliſh* had hoiſt ſail to land in Low *Britanie*, and praied him that hee would ſend Monſieur *de Roban*, and Monſieur *de Laval* for ſuccour, becauſ they were the Lords of that Countrie, and for their ſakes thoſe of that Countrie would beat back the enemie and keep them from landing. Having received this advertiſement, his Majeſtie diſpatched to ſend the ſaid Lords for the relief of their Countrie, and to each was given as much power as to the Governor; in ſo much that they were all three the King's Lieutenants. They took willingly this charge upon them, and ſpeedily went away in Poſte, and lead mee with them to *Landreneau*, there where wee found everie one in arms, the Alarum-bells ſounding on everie ſide, yea, five or ſix leagues about the *Harbors*, that is to ſaie, *Breſt*, *Conquet*, *Crozon*, *Le Fou Doulac*, *Laudanec*, each of them well furniſht with Artillerie; as Cannons, Demie-cannons, Culverins, Sakers, Serpentines, Falcons, Harquebuzes: in brief, there was nothing wanting in Artillerie, or Souldiers, as well *Britains* as *French*, to hinder that the Engliſh made no landing, as they had reſolved at their parting from England. The enemie's Armie came unto the verie mouth of the Cannon, and when wee perceived them that they would land, they were ſaluted with Cannon-ſhot, and wee diſcovered our men of War, together with our Artillerie, they fled to Sea again: where I was glad to ſee their veſſels hoiſ ſail again, which was in a great number and in good order, and ſeemed like a forreſt which marched upon the Sea. I ſaw a thing alſo whereat I marvelled much, which was, that the bullets of great peeces made great rebound's, and grazed upon the water as upon the ground. Now to make the matter ſhort, the Engliſh did us no harm, and returned whole and ſound into England, and left us in peace. Wee ſtai'd in that Conntrie in garriſon, till wee were aſſured that their Armie was diſperſed. In the mean time our horſ-men exercited their feats of activitie; as to run at the ring, fight in duel, and others, ſo that there was ſtill ſomthing to emploie mee withal. Monſieur *de Eſtampes*, to make ſport and pleaſure to ſaid Monſieur *de Roban*, and *Laval*, and other gentlemen, cauſſed diverſ Countrie wenches, to com to the feaſts, to ſing ſongs in the Low *Braitain* tongue, where their harmonie was like the croaking of Frogs, while they are in love. Moreover made them dance the *Britanie Triorie*, without moving feet or Buttocks, hee made them hear and ſee much good. Otherwhiles they cauſſed the Wraſtlers of the Citties, and Towns, to com where there was a Prize for the beſt, and ſport was ſeldom ended, but that one or other had a leg or arm broken, or the ſhoulder or hip diſplaced: there was a little man of Low *Britanie* of a ſquare bodie and well ſet, who held a long time the credit of the field, and, by his skill and ſtrength, threw five or ſix to the ground; there came to him a great ſchool-maſter, who was ſaid to bee one of the beſt Wraſtlers of all *Britanie*: hee entred into the liſts, having taken off his long jacket, in hoſe and doublet, and beeing neer the little man, hee ſeemed as if hee had been tied to his girdle. Notwithſtanding when each of them took hold of the collar, they were a long time without doing anie thing, and they thought they would remain equal in force and skill: but the little man caſt himſelf with an ambling leap under this great Pedant, and took him on his ſhoulder, and caſt him on his kidnies ſpread abroad like a frog, and then all the companie laugh't at the skill and ſtrength of the little fellow. This great *Dativo* had a great ſpight, for beeing caſt by ſo little a man: hee roſe again in choler, and would have his revenge. They took hold again of each other's collar, and were again a good while at their hold without falling to the ground: in the end this great man let himſelf

Dances of the Conntrie wenches.

Wraſtlers: little *Britain* a good wraſtler.

The little Britain kil'd. himſelf fall upon the little, and in falling put his elbow upon the pitch of his ſtomach, and burſt his heart, and kil'd him ſtark dead. And knowing hee had given him his death's blow, took again his long caſſock, and went away with his tail between his legs and hid himſelf, ſeeing that the little man came not again to himſelf, either for wine, vineger, or anie other thing that was preſented unto him; I drew near to him, and felt his pulſ which did not beat at all, then I ſaid hee was dead: then the *Britans* who aſſiſted the wraſtling ſaid aloud in their jabberring, that is not in the ſport. And ſom ſaid that the ſaid Pedagoge was accuſtomed to do ſo, and that but a year paſſed hee had don the like in a Wraſtling. I would need's open the bodie to know the cauſ of this ſudden death, where I found much blood in the *Thorax* and in the inferior bellie, and I ſtrived to finde out anie apertion in the place, from whence might iſſue ſo great a quantitie of blood, which I could not do for all the diligence I could make. Now I beleev it was *per Diapedeſin* or *Anaſtomoſin*; that is to ſaie, by the apertion of the mouths of the veſſels, or by their poroſities; the poor little Wraſtler was buried. I took leav of *Meſſieurs de Rohan, de Laval*, and *Eſtamps*. Monſieur *de Rohan*, gave mee a preſent of fiftie double duckets, and an ambling-horſ, and Monſieur *de Laval* another for my man, and Monſieur *de Eſtamps*, a Diamond of thirtie Crowns, and ſo I returned to my houſ at *Paris*.

The bodie opened by the Autor.

The Voiage of Parpignan, 1543. A Little while after Monſieur *de Rohan* took mee with him poſte, to the camp of *Parpignan*; beeing there, the enemie made a Sallie forth, and came and incloſed three pieces of our Artillerie, where they were beaten back to the gates of the citie: which was not don without hurting and killing manie, and amongſt the reſt *de Briſſac*, (who was then chief maſter of the Artillerie) received a musket ſhot upon the ſhoulder: returning to his Tent, all the others that were hurt followed him, hoping to bee dreſt by the Surgeons, that ought to dreſs them. Beeing com to his Tent and laid on his bed, the bullet was ſearched for by three or four the moſt expert Surgeons of the Armie, who could not finde it, but ſaid it was entred into his bodie.

Addreſs of the Autor. In the end hee called for mee, to ſee if I were more skilful then them, becauſ hee had known mee before in *Piedmount*: by and by I made him riſe from his bed, and praied him to put his bodie into that poſture as it was then when hee received his hurt; which hee did, taking a javelin between his hands as hee held the Pike in the skirmiſh. I put my hand about the wound, and found the bullet in the fleſh, making a little tumor under the *Omoplate*: having found it I ſhewed them the place where it was, and it was taken out by Maſter *Nicolas Lavernaut* Surgeon to Monſieur the *Dolphin*, who was the King's Lievtenant in that armie, yet notwithſtanding the honor remained to mee for findeing it.

Hiſtorie. I ſaw one thing of great remark, which is this: That a ſouldier in my preſence gave to one of his fellows a ſtroke with an Halbard upon the head, penetrating even to the left ventricle of the brain, without falling to the ground. Hee that ſtroke him ſaid, Hee had heard that hee had cheated at dice, and that hee had drawn a great ſum of monie, and that it was his cuſtom to cheat; I was called to dreſs him, which I did as it were for the laſt, knowing well that hee would quickly die: having dreſt him hee returned all alone to his lodging, which was at leaſt two hundred paces diſtant: I bid one of his companions ſend for a Prieſt to diſpoſe of the affairs of his ſoul; hee help't him to one who ſtaid with him to the laſt gaſp. The next daie the patient ſent for mee by his ſhee-friend in a boie's apparel to com to dreſs him, which I would not do, fearing hee ſhould die under my hands; and to put it off, I ſaid I muſt not take of the dreſſing till the third daie, by reaſon hee would die though hee were never touched. The third daie hee came ſtaggering, and found mee in my Tent accompanied with his wench, and praied mee moſt affectionately to dreſs him: And ſhewed mee a purſ wherein hee had an hundred or ſixſcore pieces of gold, and that hee would content mee to my deſire; for all that, yet notwithſtanding I left not off to defer the taking off his dreſſing, fearing leſt hee ſhould die at the ſame inſtant. Certain gentlemen deſired mee to go dreſs him, which I did at their requeſt, but in dreſſing him hee died under my hands in a Convulſion. Now this Prieſt accompanied him until death, who ſeazed upon the purſ leſt another ſhould take it, ſaying, Hee would ſaie Maſſes for his ſoul. Moreover hee furniſht himſelf with his cloaths, and with all the reſt of his things. I have recited this Hiſtorie as a monſtrous thing, that the Souldier fell not to ground when hee had received this great ſtroke, and was in good ſenſes even till death. Soon after, the Camp was broken for divers cauſſes; the one, becauſ wee were advertiſed that four companies of *Spaniards* were entred into *Parpignam*; the other, that the plague begun much in our camp; and it was told us by the people of the countrie, that ſhortly there would bee a great over-flowing of the Sea, which might drown us all; and the preſage which they had, was a verie great winde from Sea, which aroſe in ſuch manner that there remained not one Tent which was not broken and overthrown, for all the ſtrength and diligence that could bee given; and the Kitchins beeing all uncovered, the winde raiſed ſo the duſt and ſand, which ſalted and poudered our meat in ſuch ſort, that wee could not eat it, ſo that wee were conſtrained to boil it in pots and other veſſels well covered.

Now wee did not un-camp our ſelvs in ſo good time, but that there were many Carts and Carters Mules, and Mule-drivers drowned in the Sea, with great loſs of baggage. The Camp broken, I returned to *Paris*.

The Voiage to Landreſy, 1544. KIng *Francis* raiſed a great Armie to victual *Landreſy*: on the other ſide, the Emperor had no leſs people, yea much more; that is to ſaie, eighteen thouſand *Germans*, ten thouſand *Spaniards*, ſix thouſand *Wallons*, ten thouſand *Engliſh*, and a matter of thirteen or fourteen thouſand Horſ. I ſaw the two Armies near one another, within Cannon-ſhot, and it was thought they would never part without giving battel. There were ſom certain fooliſh gentlemen who would approach the enemie's Camp; certain ſhot was made at them, and ſom died at the place, others had their legs or arms carried away. The King having don what hee deſired, which was to victual *Landreſy*, retired

tired himſelf with his armie to *Guiſe*, which was the daie after *All-Saints*, one thouſand five hundred fortie four, and from thence I returned to *Paris*.

The Voiage of Boulogne. 1545 A Little while after wee went to *Boulogne*, where the Engliſh ſeeing our Armie, left the Forts which they had, that is to ſaie, *Moulambert*; the little Paradiſe, *Monplaiſir*, the fort of *Shatillon*, the *Portet*, the fort *Dardelot*. One daie going through the Camp to dreſs my hurt people, the enemies who were in the Tower of *Order*, ſhot off a piece of Ordnance, thinking to kill horſmen which ſtai'd to talk one with another. It happened that the bullet paſſed verie near one of them, which threw him to the ground, and 'twas thought the ſaid bullet had toucht him, which it did not at all, but onely the winde of the ſaid bullet in the mid'ſt of his coat, which went with ſuch a force that all the outward part of the thigh became black and blue, and had much ado to ſtand. I dreſt him, and made him divers Scarifications to evacuate the contuſed blood, which the winde of the ſaid bullet had made; & the rebounds that it made on the ground, kil'd four ſouldiers which remained dead in the place. I was not far from this ſtroke, ſo that I felt ſomwhat the moved air, without doing mee anie harm, then a little fear which made mee ſtoop my head verie low, but the bullet was alreadie paſſed far beyond mee.

The Souldiers mockt mee to bee afraid of a bullet alreadie gon. (My little Maſter) I think if you had been there, that I had not been afraid alone, and that you would have had your ſhare of it. What ſhall I ſaie more? Monſieur the Duke of *Guiſe*, *Francis* of *Lorrain*, was hurt before *Bullogne* with a ſtroke of a Lance, which above the right eie, declining towards the noſe, entered and paſſed quite through on the other between the *nucha* and the ear, with ſo great a violence, that the head of the Lance with a great part of the wood was broken and remained within, in ſuch ſort that it could not bee drawn out but with great force, yea, with Smith's pincers. Notwithſtanding all this violence which was not don without breaking of bones, nervs, and arteries, and other parts; my Said Lord, by the help of God, was cured: the Said Lord went alwaies with open face, which was the cauſ that the Lance went through on the other ſide.

The hurt of Monſieur *de Guiſe*.

The Voiage of Germanie. 1552. I Went the Voiage to *Germanie* in the year 1552. with Monſieur *de Rohan* Captain of fiftie horſ, where I was Surgeon of his companie, which I have ſaid alreadie. In this voiage Monſieur the high Conſtable of *France* was General of the Armie: Monſieur *de Chaſtillon*, ſince Admiral, was chief Colonel of the Foot, having four Regiments of Lanſquenets, under the Conduct of theſe Captains, *Recrod* and *Ringrave*, having each of them two Regiments, each Regiment was of ten Enſigns, and each Enſign of five hundred men. And beſides theſe, was Captain *Chartel*, who conducted the troops that the Proteſtant-Princes had ſent to the King. This was a verie companie on foot, accompanied with fifteen hundred Horſ, with the following of each one two Archers, which might make four thouſand and five hundred Horſ, beſides two thouſand Light horſ, and as manie musketeers on horſ-back, of whom Monſieur *de Aumalle* was General, beſides the great number of Nobilitie who came for their pleaſure. Moreover, the King was accompanied with two hundred Gentlemen of his houſ, and likewiſe with divers Princes; there was alſo for his troop that ſerved him, the *French*, *Scottiſh*, and *Swiſſers* Guards, amounting to ſix hundred men on foot, and the Companies of Monſieur the *Dolphin*, *Meſſieres de Guiſe*, *de Aumalle*, and of the Marſhal of Saint *Andrew*, which amounted to four hundred Lances, which was a marvellous thing to ſee ſuch a fair Companie; and in this equipage the King entered into *Thou* and *Mets*. I will not omit to tell that it was ordained, that the Companions of *Meſſieres de Rohan*, of the Count of *Sancerr*, of *Iarnac*, which was each of them of fiftie horſ, went by the Wings of the Camp; and God know's wee had ſcarcitie of victuals, and I proteſt to God, that at three divers times I had thought I ſhould have been famiſht, and it was not for want of monie, for I had enough, and wee could not have victuals but by force, by reaſon that the *Peſants* withdrew it all into the Cities and Caſtles.

One of the ſervants of a Captain of the companie of Monſieur *de Rohan*, went with others thinking to enter into a Church where the *Peſants* were retired, thinking to finde victuals by force or love: but amongſt the reſt this man was well beaten, and returned with ſeven wounds, with a ſword in the head; the leaſt of which penetrated the ſecond table of the ſcull, and hee had four other upon the arms, and upon the right ſhoulder, which cut more then one half of the blade-bone, or *Omoplate*. Hee was brought back to his maſter's lodging, who ſeeing of him ſo wounded, and they were to depart thence the morrow after at the break of daie, and not thinking ever hee could bee cured, made him a grave, and would have caſt him therein, ſaying that, or elſ the *Peſants* would maſſacre and kill him; I mov'd with pittie, told him, that hee might bee cured if hee were well dreſt: divers Gentlemen of the companie praied him that hee would cauſ him to bee brought along with the Baggage, ſeeing I had the willingneſs to dreſs him; to which hee agreed, and after that I had cloth'd him, hee was put up into a cart upon a bed well covered and well accommodated, which one horſ did draw. I did the office of a Phyſician, Apothecarie, Surgeon, and Cook; I dreſt him even to the end of his cure, and God cured him, in ſo much that all theſe three Companies admired at this cure. The horſ-men of the companie of Monſieur *de Rohan*, the firſt muſter that was made, gave mee each one, one Crown, and the Archers half a Crown.

The Voiage of Danvilliers. 1552. AT the return from the *German* Camp, King *Henrie* beſieged *Danvilliers*, thoſe within would not render. They were well beaten, and our powder failed us, in the mean time they ſhot much at our people. There was a Culverin-ſhot paſſed a traverſ the Tent of Monſieur *de Rohan*, vvhich hit a Gentleman's Leg, vvhich vvas of his train; vvhich I vvas fain to finiſh the cutting off, the vvhich vvas don vvithout applying hot irons.

Another Hiſtorie. The King ſent for povvder to *Sedan*, vvhich beeing com, they began a greater batterie then before, in ſuch ſort that they made a breach. *Meſſiers de Guiſe*, and the high Conſtable beeing

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in the King's Chamber, told him they concluded the next daie to make aſſault, and that they were aſſured they ſhould enter into it, and that they ſhould keep it ſecret leſt the enemie were advertiſed. And all of them promiſed not to ſpeak of it to anie one. Now there was a groom of the King's chamber who laie nnder the King's bed in the Camp to ſleep, underſtood that they reſolved the next daie to give an aſſault, hee preſently revealed it to a certain Captain, and told him that for certain, the daie following aſſault ſhould bee given, and that hee had heard it of the King, and praied the ſaid Captain that hee would not ſpeak a word of it to anie bodie, which hee promiſed; but his promiſe was not kept, for at the ſame inſtant, hee went and declared it to a Captain, and this Captain to another Captain, and from the Captains to ſom of the ſouldiers, ſaying alwaies, ſaie nothing. It was ſo well hid that the next daie early in the morning, there was ſeen the greateſt part of the Souldiers with their round hoſe and their breeches cut at knee for the better mounting at the breach. The King was advertiſed of the rumor which run through the Camp, that the aſſault muſt bee given, whereof hee much marvelled, ſeeing there were but three of that adviſe, which had promiſed one to another, not to tell it to anie one. The King ſent for Monſieur *de Guiſe*, to know if hee had not talked of this aſſault; hee ſwore and affirmed to him hee had not told it to anie bodie; and Monſieur the Conſtable ſaid as much; who ſaid to the King, hee muſt expreſsly know who had declared this ſetret Counſel; ſeeing they were but three. Inquiſition was made from Captain to Captain, in the end the truth was found; for one ſaid 'twas ſuch a one told mee, another ſaid as much, till at length they came to the firſt, who declared hee had learned it of a Groom of the King's-Chamber, named *Guyard*, born at *Blois*, the ſon of the deceaſed King *Francis* his Barber. The King ſent for him into his Tent, in the preſence of Monſieur *de Guiſe*, and of Monſieur the Conſtable, to underſtand from him whence hee had it, and who told him that this aſſault was to bee given. The King told him, that if hee did not tell the truth, that hee would cauſ him to bee hanged; then hee declared, hee laie down under his bed thinking to ſleep, and ſo having heard it, hee declared it to a Captain who was a friend of his, to the end hee might prepare himſelf with his Souldiers the firſt for the aſſault. After the King knew the truth; hee told him hee ſhould never ſerv him again, and that hee deſerved to bee hanged, and forbid him ever to com again to the Court. My Groom of the Chamber went away with this ſad news, and laie with one of the King's Surgeons in Ordinarie, named Maſter *Lewis*, and in the night gave himſelf ſix wounds with a knife, and cut his throat; yet the ſaid Surgeon perceived nothing till morning, till hee ſaw the bed bloodie, and the dead bodie by him: hee much marvelled at this ſpectacle upon his waking, and was afraid leſt they ſhould ſaie hee was the cauſ of this murther; but was ſoon free'd, knowing the cauſ to bee from deſperation, having loſt the good amitie which the King bore to him. The ſaid *Guyard* was buried. And thoſe of *Danvilliers* when they ſaw the breach large enough for them to enter in, and the Souldiers prepared for the aſſault, yeelded themſelvs to the mercie of the King. The chief of them were priſoners, and the Souldiers ſent away without arms. The Camp beeing broken up I returned to *Paris* with my Gentleman whoſe leg I had cut off, I dreſt him and God cured him; I ſent him to his houſ merrie with his wooden leg, and was content, ſaying that hee eſcaped good cheap, not to have been miſerable burnt, as you write in your book, my little Maſter.

What it is to reveal the ſecrets of Princes.

The Voiage of Caſtle the Compt, 1552. The King of *Navarre* praied the Autor to follow him

A Little while after, King *Henrie* levied an Armie of thirtie thouſand men, to go make ſpoil about *Hedin*. The King of *Navarre* who was then called Monſieur *de Vendoſme*, was chief of the Armie, and the King's Lievtenant. Beeing at S. *Denis* in *France*, ſtaying while the Companies paſſed by, hee ſent for mee to *Paris* to com ſpeak with him; beeing there, hee praied mee, and his requeſt was a command, that I would follow him this Voiage; and I about to make my excuſe, told him my wife was ſick in her bed; hee made mee anſwer, That there were Phyſicians at *Paris* for to cure her; and that hee as well left his own, who was as well deſcended as mine; promiſing mee that hee would uſe mee well, and forthwith gave command that I ſhould bee lodged as one of his Train. Seeing this great affection, which hee had to lead mee with him, I durſt not refuſe him. I went and met with him at the Caſtle of *Compt*, within three or four leagues of *Hedin*, there where there was the Emperor's Souldiers in garriſon with a number of *Peſſants* round about: hee cauſſed them to bee ſummoned to render themſelvs; and they made anſwer they ſhould never have them but by pieces, and let them do their worſt, and they would do their beſt to defend themſelvs. They put confidence in their ditches full of water, and in two hours with a great number of Bavins, and certain emptie Casks, waie was made to paſs over the Foot: when they muſt go to the aſſault and were beaten with five pieces of Cannon, till a breach was made large enough to enter in, where they within received the aſſault verie valiantly, and not without killing and hurting a great number of our people with musket-ſhot, pikes, and ſtones. In the end when they ſaw themſelvs conſtreined, they put fire to their powder and munition, which was the cauſ of burning manie of our people, and their's likewiſe, and they were all almoſt put to the ſword. Notwithſtanding ſom of our Souldiers had taken twentie or thirtie, hoping to have ranſom for them. That was known, and ordered by the Counſel, that it ſhould bee proclamed by the Trumpet through the Camp, that all Souldiers who had anie *Spaniards* priſoners, were to kill them, upon pain to bee hanged and ſtrangled, which was don upon cold blood. From thence wee went and burnt divers Villages, whoſe barns were full of all kinde of grain, to my great grief. Wee went along even to *Tournahan*, where there was a verie great Tower where the Enemies retired, but there was no man found in it, all was pillaged, and the Tower was made to leap by a Mine, and then with gun-powder turned topſie-turvie. After that, the Camp was broken up, and I returned to *Paris*. I will not yet forget to write that the daie after the Caſtle of *Compt* was taken, Monſieur *de Vendoſme* ſent a Gentleman to the King to make report to him

Hiſtorie of deſperate people.

The taking of Caſtle of Compt.

him of all which had paſſed, and amongſt other things, told the King that I had greatly don my dutie in dreſſing thoſe that were wounded, and that I had ſhewed him eighteen bullets which I had taken or drawn out of the hurt bodies, and that there were divers more which I could neither finde, nor draw out, and told more good of mee then there was by half. Then the King ſaid hee would have mee into his ſervice, and commanded Monſieur *de Goguier* his chief Phyſician to write mee down as entertained one of his Surgeons in ordinarie, and that I ſhould go meet with him at *Rheimes* within ten or twelv daies; which I did, where hee did mee the honor to command mee that I would dwell near him, and that hee would do mee good. Then I thank'd him moſt humbly for the honor it pleaſed him to do mee, in calling mee to his ſervice.

The Voiage of Mets, 1552.

THe Emperor having beſieged *Mets*, and in the hardeſt time of winter, as each one know's of freſh memorie: and that there was in the Cittie five or ſix thouſand men, and amongſt the reſt ſeven Princes; that is to ſaie, Monſieur the Duke of *Guiſe* the King's Lievtenant, *Meſſieurs d' Anguien, de Conde, de Montpenſier, de La Roch uprn Yon*, Monſieur *de Nemours*, and divers other Gentlemen, with a number of old Captains of War, who often made ſallies forth upon the enemies, (as wee ſhall ſpeak of hereafter) which was not don without ſlaying manie, as well on the one ſide as the other. For the moſt part all our wounded people died, and it was thought the medicaments, wherewith they were dreſſed, were poiſoned; which cauſſed Monſieur *de Guiſe* and other Princes to ſend to the King for mee, and that hee would ſend mee with Drogues to them, for they beleeved their's were poiſoned, ſeeing that of their hurt people few eſcaped. I do not beleev there was anie poiſon, but the great ſtrokes of the Cutlaſſes, musket-ſhot, and the extremitie of cold was the cauſe. The King cauſſed one to write to Monſieur the Marſhal of S. *Andrew* which was his Lievtenant at *Verdun*, that hee found ſom means to make mee enter into *Mets*. The ſaid Lord Marſhal of S. *Andrew* and Monſieur the Marſhal of old *Ville*, got an *Italian* Captain, who promiſed them to make mee enter in, which hee did, and for which hee had fifteen hundred Crowns: the King having heard of the promiſe which the *Italian* Captain had made, ſent for mee, and commanded mee to take of his Apothecarie named *Daigue*, ſuch, and as manie Drogues as I ſhould think fit for the hurt who were beſieged, which I did, as much as a poſt-horſe could carrie. The King gave mee charge to ſpeak to Monſieur *de Guiſe*, and to the Princes, and Captains who were at *Mets*. Beeing arrived at *Verdun*, a few daies after the Monſieur the Marſhal of S. *Andrew*, cauſſed horſes to bee given to mee, and my man, and for the *Italian*, who ſpake verie good high *Dutch*, *Spaniſh*, and *Wallon*, with his own natural tongue. When wee were within eight or ten Leagues of *Mets*, wee went not but in the night, and beeing near the Camp, I ſaw a league and a half off bright fires about the Cittie, which ſeemed as if all the earth were on fire, and I thought wee could never paſs through thoſe fires without beeing diſcovered, and by conſequent bee hanged and ſtrangled, or cut in pieces, or paie a great ranſom. To ſpeak truth, I wiſhed my ſelf at *Paris*, for the imminent danger which I fore-ſaw. God guided ſo well our affairs that wee entred into the Cittie at midnight with a certain Token, which the Captain had with another Captain of the companie of Monſieur *de Guiſe*: which Lord I went to, and found him in bed, who received mee with great thanks, beeing joiful of my comming. I did my meſſage to him of all that the King had commanded mee to ſaie to him; I told him I had a little letter to give to him, and that the next daie I would not fail to deliver it him. That don, hee commanded mee a good lodging, and that I ſhould bee well uſed, and bid mee I ſhould not fail to bee the next daie upon the Breach, where I ſhould meet with all the Princes, and divers Captains, which I did; who received mee with great joie, who did mee the honor to imbrace mee, and tell mee I was verie welcom, adding withal, they did not fear to die if they ſhould chance to bee hurt. Monſieur *de la Roch upon Yon* was the firſt that feaſted mee, and inquired of mee what they ſaid at the Court concerning the Cittie of *Mets*: I told him what I thought good. Then preſently hee deſired mee to go ſee one of his Gentlemen, named Monſieur *de Magnane*, at this preſent Knight of the King's Order, and Lievtenant of his Majeſtie's Guard; who had his leg broken by a Cannon-ſhot. I found him in his bed, his leg bended and crooked, without anie dreſſing upon it; becauſe a Gentleman promiſed him cure, having his name, and his girdle, with certain words. The poor Gentleman wept, and cried with pain which hee felt, not ſleeping either night or daie, in four daies: then I mock't at this impoſture and falſe promiſe. Preſently I did ſo nimbly reſtore and dreſs his Leg, that hee was without pain and ſlept all night, and ſince (thanks bee to God) was cured, and is yet at this preſent living, doing ſervice to the King. The ſaid Lord of the *Roch upon Yon* ſent mee a tun of wine to my lodging, and bid tell mee, when it was drunken hee would ſend mee another. That don, Monſieur *de Guiſe* gave mee a liſt of certain Captains and Lords, and commanded mee to tell them what the King had given Mee in charge; vvhich I did, vvhich vvas to do his commendations and a thankſgiving for the dutie they had don, and did in the keeping of the Cittie of *Mets*, and that hee vvould acknovvledg it. I vvas more then eight daies in acquitting my charge, becauſe they vvere manie; firſt to the Princes and others; as the Duke of *Horace*, the Count of *Martigues*, and his brother, Monſieur *de Bauge*, the Lords *Montmorancy*, and *d' Anville*, then Marſhal of *France*, Monſieur *de La Chapel*, *Bonnivet Caroug* novv Governor of *Rohan*, the *Vadaſme* of *Chartres*, the Count of *Lude*, Monſieur *de Biron* novv Marſhal of *France*, Monſieur *de Randan* the *Rochfoucaut*, *Boxdaille d'Etrez*, the younger, Monſieur *de S. John* in *Dolphiny*, and manie others vvhich it vvould bee too long to recite; and chiefly to divers Captains vvho had verie vvell don their dutie in defenſe of their lives and Cittie. I demanded aftervvards of Monſieur *de Guiſe*, vvhat it pleaſed I ſhould do vvith the Drogues vvhich I had brought, hee bid mee impart them to the Surgeons and Apothecaries, and chiefly to the poor hurt Souldiers in the Hoſpital vvhich vvere in great number; vvhich I did, and can aſſure you, I could not do ſo much as go and ſee them, but they

The names of the Princes who were at the ſiege of Mets.

Nota.

Commiſſion of the Autor.

Hiſtorie.

ſent for mee to viſit and dreſs them. All the beſieged Lords praied mee carefully to ſollicite above all others Monſieur *de Pienne* who was hurt at the breach by a ſtone raiſed by a Cannon-ſhot in the Temple with a fracture, and depreſſing of the bone. They told mee that preſently when hee received the ſtroak, hee fell to the earth as dead, and caſt blood out of his mouth, noſe, and ears with great vomitings, and was fourteen daies without ſpeaking one word, or having anie reaſon; there happened to him alſo ſtartings ſomwhat like Convulſions, and had all his face ſwell'd and livid. Hee was trepan'd on the ſide of the temporal muſcle upon the *Os Coronale*. I dreſt him with other Surgeons, and God cured him; and is at this daie living, God bee thanked. The Emperor cauſſed batterie to bee made with fortie double Cannons, where they ſpared no powder night nor daie. Preſently when Monſieur *de Guiſe* ſaw the Artillerie ſeated to make a breach, hee made the neareſt houſes to bee pulled down to make Ramparts, and the poſts and beams were ranged end to end, and between two clods of earth, beds and packs of wool, and then other poſts and beams were put again upon them as before. Now much wood of the houſes of the Suburbs, which had been put to the ground for fear leſt the enemie ſhould bee lodged, cloſe covered, and that they ſhould not help themſelvs with anie wood) ſerved well to repair the Breach. Everie one was buſied to carried earth to make the Ramparts night and daie. *Meſſieres* the Princes, Lords and Captains, Lievtenants, Enſigns, did all carrie the Basket, to give example to the Souldiers and Citizens to do the like, which they did: yea, both Ladies and Gentlewomen, and thoſe which had not baskets, helpt themſelvs with kettles, panniars, ſacks, ſheets, and with what elſ they could to carrie earth; in ſo much that the enemie had no ſooner beaten down the Wall, but hee found behinde it a Rampart more ſtrong. The Wall beeing faln, our Souldiers cried to thoſe without, the Fox, the Fox, the Fox, and ſpake a thouſand injuries one to another. Monſieur *de Guiſe* commanded upon pain of death that no man ſhould ſpeak to them without, for fear leſt there ſhould bee ſom Traitor who would give them intelligence what was don in the Cittie; the command made, they tied living Cats at the end of their Pikes, and put them upon the Wall, and cried with the Cats, miau, miau.

The hurt of Monſieur *de Pienne*, trepan'd and cured.

Princes carried the Baskets.

Truly the Emperialiſts were verie much vexed to have been ſo long making a Breach, and at ſo great expenſ, which was the breach of fourſcore ſteps, to enter fiftie men in front, where they found a Rampart more ſtrong then the wall; they fell upon the poor Cats and ſhot at them with their muskets as they uſe to do at birds. Our people did oftentimes make ſallies by the command of Monſieur *de Guiſe*. The daie before there was a great preſs to make themſelvs enrowled, who muſt make the ſallie, chiefly of the young Nobilitie, lead by well experimented Captains. Inſomuch that it was a great favor to permit them to ſallie forth and run upon the enemie: and they ſallied forth alwaies the number of one hundred, or ſixſcore armed men with Cutlaſſes, Muskets, Piſtols, Pikes, Partiſans and Halberds, which went even to their trenches to awaken them. Where they preſently made an alarum throughout all their Camp, and their Drums ſounded, plan, plan, ta ti, ta, ta, ta, ti, ta, tou, touf, touf: likewiſe their Trumpets and Cornets ſounded, to the ſaddle, to the ſaddle, to the ſaddle, to horſ, to horſ, to horſ, to the ſaddle, to horſ. And all their ſouldiers cri'd, Arm, arm, arm, to arms, to arms, to arms, arm, to arms, arm, to arms, arm to arms, like the crie after Wolvs, and all divers tongues, according to their Nations: and they were ſeen to go out from their tents, and little lodgings, as thick as little Bees, when their hive is diſcovered; to ſuccor their fellows, who had their throats cut like ſheep. The horſ-men likewiſe came from all parts, a great gallop, patati, patata, patati, patata, ta, ta, patata, patata, and tarried well, that they might not bee in the throng, where ſtroaks were imparted to give and receiv. And when our men ſaw they were forced, they returned into the Citie, ſtill fighting, and thoſe who run after were beaten back with the Artillerie which they had charged with flint-ſtones, and four-ſquare pieces of iron; and our ſouldiers who were upon the ſaid Wall made a vollie of ſhot, and ſhowred down their bullets upon them like hail, to ſend them back to their lodging, where divers remained in the place of the combat, and alſo our men did not all com with whole skins, and there ſtill remained ſom for the Tithe, who were joiful to die in the bed of honor. And where there was a horſ hurt, hee was flaied, and eaten by the Souldiers in ſtead of beef and Bacon, and it was fit I muſt run to dreſs our hurt men. A few daies after other ſallies were made, which did much anger the enemies, becauſ they did not let them ſleep but little in ſafetie. Monſieur *de Guiſe*, made a war-like ſtratagem, which was, Hee ſent a Peſant who was none of the wiſeſt with two pair of letters toward the King, to whom hee gave ten Crowns, and promiſed the King ſhould give him an hundred, provided hee gave him the letters. In the one, hee ſent word that the enemie made no ſign of retiring himſelf, and by all force made a great Breach, which hee hoped to defend, yea, to the loſing of his life, and of all thoſe that were within; and that the enemie had ſo well placed his Artillerie in a certain place which hee named, that with great difficultie was it kept that they had not entered into it, ſeeing it was a place the moſt weak of all the Cittie: but hee hoped quickly to fill it up again in ſuch ſort, that they cannot bee able to enter. One of theſe Letters was ſewed in the lining of his doublet, and hee was bid to take heed that hee told it not to anie man. And there was alſo another given to him; wherein the ſaid Monſieur *de Guiſe* ſent word to the King, that hee and all the beſieged did hope well to keep the Citie, and other matters which I ceaſ to ſpeak of. They made the Peſant go forth in the night, and preſently after hee was taken by one that ſtood Sentinel, and carried to the Duke of *Albe*, to underſtand what was don in the Cittie, and they asked him if hee had anie letters, hee ſaid, yes, and gave them one; and having ſeen it, hee was put to his oath, whether hee had anie other, and hee ſwore, not; then they felt and ſearch't him, and found that which was ſewed to his doublet, and the poor meſſenger was hanged.

Breach.

The ſaid letters were communicated to the Emperor, who cauſſed his counſel to bee called there, where

it was reſolved, ſince they could do nothing at the firſt breach, that preſently the Artillerie ſhould bee drawn to the place which they thought the moſt weak, where they made great attempts to make another breach, and dig'd and undermined the wall, and endevoured to take the Tower of Hell, yet they durſt not com to the aſſault. The Duke of *Albe* declared to the Emperor that the ſouldiers died daily, yet more then the number of two hundred, and that there was but little hope to enter into the Citie, ſeeing the ſeaſon, and the great quantitie of Souldiers that were there. The Emperor demanded what people they were that died, and if that they were gentlemen of remark or qualitie: anſwer was made, that they were all poor ſouldiers; then ſaid hee, It make's no matter if they die, comparing them to caterpillers and graſhoppers, which eat the buds of the earth. And if they were of anie faſhion, they would not bee in the Camp for twelv ſhillings the month, and therefore no great harm if they died. Moreover hee ſaid, Hee would never part from before that Cittie, till hee had taken it by force or famine, although hee ſhould loſe all his Armie; by reaſon of the great number of Princes which were therein, with the moſt part of the Nobilitie of *France*. From whom hee hoped to draw double his expenſ, and that hee would go once again to *Paris*, to viſit the Pariſiens, and make himſelf King of all the Kingdom of *France*. Monſieur *de Guiſe* with the Princes, Captains, and Souldiers, and generally all the Citizens of the Cittie, having underſtood the intention of the Emperor, which was to extirpate us all, they adviſed of all they had to do: And ſince it was not permitted to the Souldiers, nor Citizens, no nor to the Princes, nor Lords themſelvs to eat either freſh-fiſh, or veniſon, as likewiſe ſom partridges, woodcocks, larks, plovers, for fear leſt they had gathered ſom peſtilential air which might give us anie contagion; but that they ſhould content themſelvs with the ammunition-fare; that is to ſaie, with biſquet, Beef, poudered-cows, lard, and gammons of bacon: Likewiſe fiſh; as green-fiſh, ſalmon, ſturgeon, anchovies, pilchers and herrings, alſo peaſ, beans, riſe, garlike, onions, prunes, cheeſ, butter, oil, ſalt, pepper, ginger, nutmegs, and other Spiceries to put into pies, chiefly to horſ-fleſh, which without that would have had a verie ill taſte; divers Cittizens having gardens in the Cittie ſowed therein great Raddiſhes, Turnips, Carrots, and Leeks, which they kept well and full dear, againſt the extremitie of hunger. Now all theſe ammunition-victuals were diſtributed by weight, meaſure, and juſtice, according to the qualitie of the perſon, becauſ wee knew not how long the ſiege would laſt. For having underſtood from the mouth of the Emperor, that hee would never part from before *Mets*, till hee had taken it by force or famine; the victuals were leſſened, for that which was wont to bee diſtributed to three, was now ſhared amongſt four, and defenſ made they ſhould not ſell what remained after their dinner, but 'twas permitted to give it to the wenches that followed the Camp, And roſe alwaies from table with an appetite, for fear they ſhould bee ſubject to take Phyſick. And, before wee would yeeld our ſelvs to the mercie of our enemies, had reſolved to eat our Aſſes, Mules, Horſes, Dogs, Cats and Rats; yea, our boots and other skins which wee could ſoften and frie. All the beſieged did generally reſolv to defend themſelvs with all ſorts of Inſtruments of War; that is to ſaie, To rank, and charge the Artillerie, at the entrie of the Breach, with bullets, ſtones, cart-nails, bars, and chains of iron. Alſo all kindes and differences of artificial Fire; as Boertes, Bariquado's, Granado's, Ports, Lances, Torches, Squibs, burning-faggots. Moreover, ſcalding-water, melted-lead, powder of unquenched lime to blinde their eies. Alſo they were reſolved to have made holes through and through their houſes, there to lodg musketeers, there to batter in the flank and haſten them to go, or elſ make them lie for altogether. Alſo there was order given to the women to unpave the ſtreets, and to caſt them out at their windows, billets, tables, treſſles, forms, and ſtools, which would have troubled their brains: moreover, there was a little further, a ſtrong Court of Guard, fil'd with carts and palliſado's, pipes and hogſheads fil'd with earth for barriquado's to ſerv to interlaie with faulcons, faulconets, field-pieces, harquibuzes, muskets, and piſtols, and wilde-fire, which would have broken legs and thighs, inſomuch that they had been beaten in head, in flank, and in tail; and where they had forced this Court of Guard, there was others at the croſſing of the ſtreets, each diſtant an hundred paces, who had been as bad companions as the firſt, and would not have been without making a great manie Widdows and Orphans. And if fortune would have been ſo much againſt us, as to have broken our Courts of Guard, there was yet ſeven great Baſtallions ordered in ſquare, and triangle, to combate altogether, each one accompanied with a Prince to give them boldneſs, and encourage them to fight, even till the laſt gaſp, and to die altogether. Moreover it was reſolved, that each one ſhould carrie his treaſure, rings and jewels, and their houſhold-ſtuff of the beſt, to burn them in the great place, and to put them into aſhes rather then the enemie ſhould prevail, and make Trophies of their ſpoils; likewiſe there was people appointed to put fire to the munition, and to beat out the heads of the Wine-cask, others to put the fire in each houſ, to burn our enemies and us together: The Cittizens had accorded it thus, rather then to ſee the bloodie knife upon their throat, and their Wives and Daughters violated, and to bee taken by force, by the cruel and inhumane *Spaniards*. Now wee had certain priſoners which Monſieur *de Guiſe* ſent away upon their faith, to whom was ſecretly imparted our laſt reſolution, will, and deſperate mindes; who beeing arrived in their Camp, do not defer the publiſhing; which bridled the great impetuoſitie, and will of the ſouldiers to enter anie more into the Cittie to cut our throats, and to enrich themſelves of our pillags. The Emperor having underſtood this deliberation of the great Warriour, the Duke of *Guiſe* put water in his wine, and reſtreined his great choler and furie, ſaying, Hee could not enter into the Cittie without making a great ſlaughter and butcherie, and ſpill much blood, as well of the defendents, as of the aſſailants, and that they ſhould bee dead together, and in the end could have nothing elſ but a few aſhes, and that afterward it might bee ſpoken of that, as of the deſtruction *Jeruſalem* alreadie made by *Titus* & *Veſpatian*. The Emperor then having underſtood our laſt reſolution, & ſeeing their

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little prevailing by their batterie and undermining, and the great plague which was in his whole armie, and the indiſpoſition of the time, and the want of victuals and monie, and that his ſouldiers forſook him, and went away in great companies; concluded in the end to retire themſelvs accompanied with the Cavallerie of his Vantgard, with the greateſt part of his Artillerie, and the Battalia: The Marqueſs of *Brandeborg* was the laſt which uncampt, mainteined by certain bands of *Spaniards*, *Bohemians*, and his *Germane* companies, and there remained one daie and a half after, to the great grief of Monſieur *de Guiſe*, who cauſſed four pieces of Artillerie to bee brought out of the Cittie, which hee cauſſed to bee diſcharged at him on one ſide; and the other to haſten them to bee gon, which hee did full quickly, with all his Troops. Hee beeing a quarter of a league from *Mets* was taken with a fear leſt our Cavallerie ſhould fall upon him in the Rere, which cauſſed him to put fire to his munition-powder, and leav certain pieces of Artillerie, and much baggage which hee could not carrie, becauſ the Vantgard, and the Battalia, and great Cannons had too much broken the waie. Our horſ-men would by all means have gon out of the cittie to have faln upon their breech. But Monſieur *de Guiſe* would never permit them, but on the contrarie wee ſhould rather make plain their waie, and make them bridges of gold and ſilver, and let them go, beeing like to a good ſhepherd, who will not loſe one of his ſheep. See now how our well-beloved Imperialiſts went away from before the Cittie of *Mets*, which was the daie after *Chriſtmas* daie, to the great contentment of the beſieged, and honor of Princes, Captains, and Souldiers, who had endured the travels of this ſiege the ſpace of two months. Notwithſtanding they did not all go, there wanted twentie thouſand who were dead, as well by Artillerie, by the ſword, as alſo by the plague, cold, and hunger, and for ſpight they could not enter into the Cittie to cut our throats, and have the pillage: and alſo a great number of their horſes died, of which they had eaten a great part in ſtead of Beef and Bacon. They went where they had been encamped, where they found divers dead-bodies not yet buried, and the earth all digged like S. *Innocent's* Church-yard in the time of the plague. They did likewiſe leav in their lodgings, pavillions and tents, divers ſick people: alſo bullets, arms, carts, waggons, and other baggage, with a great manie of munition-loavs, ſpoiled and rotten by the rain and ſnow, yet the ſouldiers had it but by weight and meaſure; and likewiſe they left great proviſion of wood, of the remainders of the houſes of the Villages which they had pluckt down two or three miles compaſs, likewiſe divers other houſes of pleaſure belonging to the Citizens, accompanied with fair gardens, graſs-plats fil'd with fruit-trees, for without that they had been ſtarv'd with cold, and had been conſtreined to have rais'd the ſiege ſooner. The Said Monſieur *de Guiſe* cauſſed the dead to bee buried, and dreſs their ſick people; likewiſe the enemies left in the Abbie of S. *Arnoul* divers of their hurt ſouldiers which they could not lead with them: the Said Monſieur *de Guiſe* ſent them all victuals enough, and commanded mee and other Surgeons to go dreſs them and give them medicines; which wee willingly did, and think they would not have don the like toward others (becauſ the *Spaniard* is moſt cruel, perfidious, and inhumane, and therefore enemie to all Nations) which is proved by *Lopez* a *Spaniard*, and *Benzo* of *Milan*, and others who have written the hiſtorie of *America*, and the Weſt-*Indies*, who have been conſtreined to confeſs, that the crueltie, avarice, blaſphemie, and wickedneſs of the *Spaniards*, have altogether alienated the poor *Indians* from the Religion which the Said *Spaniards* are ſaid to hold. And all write, they are leſs worth then the Idolatrous *Indians*, by the cruel uſage don to the ſaid *Indians*.

And a few daies after wee ſent a Trumpet to *Thionville* toward the enemie, that they ſhould ſend back for their wounded men in ſafetie, which they did with Carts and Waggons, but not enough. Monſieur *de Guiſe*, cauſſed them to have Carts and Carters, to help to carrie them to the Said *Thionville*. Our Said Carters beeing returned back, brought us word that the waie was paved with dead bodies, and that they never lead back the half, for they died in their Carts, and the *Spaniards* ſeeing them at the point of death, before they had caſt out their laſt gaſp, caſt them out of their Carts, and buried them in the mud and mire, ſaying, They had no order to bring back the dead. Moreover our Said Carters ſaid, they met by the waie divers Carts loaden with baggage ſticking in the mire, which they durſt not ſend for back, for fear leſt thoſe of *Mets* ſhould fall upon them. I will again return to the cauſ of their mortalitie, which was principally through hunger, plague, and cold; for the ſnow was two foot thick upon the earth, and they were lodged in the caves of the earth, onely covered with a little ſtraw. Notwithſtanding each Souldier had his field-bed, and a covering ſtrewed with glittering ſtars, more bright then fine gold, and everie daie had white ſheets, and lodged at the ſign of the Moon, and made good cheer when they had it, and pai'd their hoſte ſo well over-night, that in the morning they went away quite, ſhaking their ears, and they needed no comb to take away the doun out of their hairs either of head or beard, and found alwaies a white table-cloth, loſing good meals for want of Victuals. Alſo the greateſt part of them had neither boots, nor buskins, ſlippers, hoſe, or ſhooes, and divers had rather have none then have them, becauſ they were alwaies in mud, half waie of the leg; and becauſ they went bare-leg'd, wee called them the Emperor's Apoſtles. After the Camp was wholly broken, I diſtributed my patients into the hands of the Surgeons of the Cittie, to finiſh their cure: then I took leav of Monſieur *de Guiſe*, who came back toward the King, who received mee with a loving countenance, and demanded of mee how I did enter into the Cittie of *Mets*. I recounted to him all that I had don, hee cauſſed two hundred crowns to bee given mee, and one hundred I had at my going out, and told mee hee would not leav mee poor; then I thanked him moſt humbly for the good and the honor which hee pleaſed to do mee.

The Voiage of *Hedin.* 1553. *Charls* the Emperor cauſſed the Cittie of *Theroüenne* to bee beſieged, where Monſieur, the Duke of *Savoy*, was General of the whole Armie: it was taken by aſſault where there

was a great number of our men ſlain and priſoners. The King willing to prevent that the enemie ſhould not alſo com to beſiege the Cittie and Caſtle of *Hedin*, ſent *Meſſiers* the Duke *Bouillion*, the Duke *Horace*, the Marqueſs of *Villars*, a number of Captains, and about eight hundred ſouldiers, and during the ſiege of *Theroüenne*, the Said Lords fortified the ſaid Caſtle of *Hedin*, in ſuch ſort that it ſeemed impregnable. The King ſent mee to the Said Lord to help them with my Art, if there were anie need. Now ſoon after the taking of *Theroüenne*, wee were beſieged with the Armie: there was a quick clear fountain or Spring, within Cannon-ſhot, where there was about fourſcore whores, and wenches of the enemies, who were round about it to draw water. I was upon a Rampart beholding the Camp, and ſeeing ſo manie idlers about the ſaid fountain, I praied Monſieur *de Pont* Commiſſarie of the Artillerie, to make one Cannon-ſhot at that roguiſh companie, hee made mee much denial, anſwering mee that ſuch kinde of people were not worth the powder they ſhould waſte. Again I praied him to level the Cannon, telling of him, the more dead, the fewer enemies; which hee did through my requeſt, and at that ſhot fifteen or ſixteen were kil'd, and manie hurt. Our ſouldiers ſallied forth upon the enemies, where there was manie kil'd and ſlain with musket-ſhot and ſwords, as well on the one ſide, as of the other, and our ſouldiers did often make ſallies forth upon the enemies before their trenches were made; where I had much work cut out, ſo that I had no reſt night nor daie for dreſſing the wounded. And I will tell this by the waie, that wee had put manie of them in a great Tower, laid upon a little ſtraw, and their pillows were ſtones, their coverlets were their cloaks, of thoſe that had anie. Whil'ſt the batterie was making, as manie ſhot as the Cannons made, the patients ſaid they felt pain in their wounds, as if one had given them blows with a ſtaff, the one cri'd his head, the other his arm, and ſo of other parts; divers of their wounds bled a freſh, yea in greater quantitie then firſt when they were wounded, and then it was I muſt run to ſtaie their bleeding. My little maſter, if you had been there, you had been much troubled with your hot-irons, you had need to have had much charcoal to make them red hot, and beleev they would have ſlain you like a Calf for this crueltie. Now through this diabolical tempeſt of the Eccho from theſe thundering Inſtruments, and by the great and vehement agitation of the colliſion of the air reſounding and reverberating in the wounds of the hurt people, divers died, and others becauſ they could not reſt by reaſon of the groans and cries that they made night and daie; and alſo for want of good nouriſhment, and other good uſage neceſſarie to wounded people. Now my little maſter, if you had been there you would hardly have given them gellie, reſtauratives, culliſes, preſſures, panado, cleanſed barlie, white meat, almond-milk, prunes, raiſins, and other proper meats for ſick people: your ordinance would onely have been accompliſht in paper, but in effect they could have had nothing but old Cow-bief, which was taken about *Hedin* for our munition, ſalted and half-boiled, in ſo much that who would have eat it, hee muſt pull it with the force of his teeth, as birds of Preie do carrion. I will not forget their linnen wherewith they were dreſt, which was onely rewaſhed everie daie, and dried at the fire, and therefore drie and ſtubborn like Parchment, I leav you to think how their wounds could heal well. There were four luſtie whores to whom charge was given to waſh their linnen, who diſcharged their dutie under penaltie of the batoon, and alſo they wanted both ſope and water. See then how the ſick people died for want of nouriſhments, and other neceſſarie things. One daie our enemies feigned to give us a general aſſault, to draw our Souldiers upon the breach, to the end, to know our countenance & behaviour: everie one ran thither, wee had made great proviſion of artificial fire to defend the breach; a Prieſt belonging to Monſieur *du Bouillon* took a granado, thinking to throw it on the enemies, and ſet it on fire ſooner then it ought to have don: it brake aſunder, and the fire fell amongſt our fire-works, which were put into a houſ near the breach; which was to us a marvellous diſaſter, becauſ it burned divers poor ſouldiers: it alſo took hold on the houſ it ſelf, and wee had been all burned had not great help been uſed for to quench it; there was but one Well there wherein was water in our Caſtle, which was almoſt quite dried up, and in ſtead of water wee took beer and quenched it: then afterwards wee had great ſcarcitie of water, and to drink the reſt that remained which wee muſt ſtrain through napkins.

Now the enemie ſeeing this ſmoak and tempeſt of the fire-works which caſt a verie great flame and claſhing noiſ, beleeved wee had put the fire on purpoſe for the defenſ of our breach, to burn them, and that wee had great ſtore of others. That made them to bee of another opinion, then to take us by aſſault; they did undermine, and dig into the greateſt part of our walls, ſo that it was the waie to overthrow wholly the Caſtle topſie-turvie, and when the mines were finiſht, and that their Artillerie ſhot, the whole Caſtle did ſhake under us like an earth-quake, which did much aſtoniſh us. Moreover hee had levelled five pieces of Artillerie which they had ſeated upon a little hill, to plaie upon our backs when wee ſhould go to defend the breach.

The Duke *Horace* had a Cannon-ſhot upon one ſhoulder, which carried away his arm on one ſide and the bodie on the other, without beeing able to ſpeak one onely word. His death was to us a great diſaſter for the rank vvhich hee held in his place.

Likevviſe Monſieur *de Martigues* had a ſtroak vvith a bullet vvhich pierc't through his Lungs; I dreſt him, as I vvill declare hereafter. Then wee demanded Parl, and a Trumpet was ſent tovvard the Prince of *Piedmont*, to knovv vvhat compoſition it pleaſed him to make us: His anſvver vvas, that all the chief, as Gentlemen, Captains, Lievtenants, and Enſigns, ſhould bee taken for ranſom, and the Souldiers ſhould go out vvithout Arms; and if they refuſed this fair and honeſt proffer, the next daie vvee ought to bee aſſured they vvould have us by aſſault or othervviſe. Counſel vvas held, vvhere I vvas called to knovv if I vvould ſign as divers Captains, Gentlemen, and others, that the place ſhould bee rendered up. I made anſvver it vvas not poſſible to bee held, and that I vvould ſign it vvith my proper blood, for the little hope that I had, that vvee could reſiſt the enemies force, & alſo for the great deſire vvhich I had to bee

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out of this torment, and hell; for I ſlept not either night or daie, by reaſon of the great number of hurt people, which were about two hundred. The dead bodies yeelded a great putrefaction, beeing heaped one upon the other like fagots, and not beeing covered with earth becauſ wee had it not; and when I entred into one lodging, Souldiers attended mee at the door to go dreſs others at another; when I went forth, there was ſtriving who ſhould have mee, and they carried mee like a holie bodie not touching the ground with my foot in ſpight one of another; nor could I ſatisfie ſo great a number of hurt people. Moreover I had not what was neceſſarie to dreſs them withal; for it is not ſufficient that the Surgeon do his dutie towards the patients, but the patient muſt alſo do his, and the aſſiſtance, and all exterior things; witneſs *Hippocrates* in his firſt *Aphoriſme*. Now having underſtood the reſolution of the yeelding up of our place, I knew our affairs went not well; and for fear of beeing known, I gave a velvet coat, a Satin doublet, a verie fine cloth-cloak lin'd with velvet, to a ſouldier, who gave mee a ſcurvie old torn doublet cut and ſlaſht with uſing, and a leather jerkin well examined, and an ill favored hat, and a little cloak; I ſmutcht the collar of my ſhirt with water in which I had mingled a little ſoot; likewiſe I wore out my ſtockings with a ſtone at the knees and the heels as if they had been worn a long time, and I did as much to my ſhooes, in ſo much, that they would rather take mee for a Chimnie-ſweeper, then a King's Surgeon. I went in this Equipage towards Monſieur *de Martigues*, where I praied him that hee would take order that I might remain near him to dreſs him, which hee agree'd to moſt willingly, and had as much deſire I ſhould remain with him as my ſelf. Soon after, the Commiſſioners, who had charge to elect the priſoners, entred into the Caſtle, the ſeventeenth daie of *Julie* one thouſand five hundred fiftie three, where they made *Meſſieurs* the Duke of *Bouillon*, the Marqueſs of *Villars*, the Baron of *Culan*, Monſieur *du Pont* Commiſſarie of the Artillerie, and Monſieur *de Martigues*, and I to bee taken through the requeſt that hee made to them; and all other Gentlemen which they could perceiv were able to paie anie ranſom, and the moſt part of the Souldiers and the chief of the Companies, having ſuch, and ſo manie paiſoners as they would.

Afterward the *Spaniſh* Souldiers entered by the Breach without anie reſiſtance, for ours eſteemed they would hold their faith and compoſition that they ſhould have their lives ſaved. They entred in with a great furie to kill, pillage, and to rifle all they reteined: ſom hoping to have ranſom, they tied their ſtones with Arquebuſ-cords, which was caſt over a pike which two held upon their ſhoulders, then pulled the ſaid cord with a great violence and deriſion, as if they would ring a bell, telling them that they muſt put themſelvs to the ranſom, and tell of what houſes they were; and if they ſaw they could have no profit, made them cruelly die between their hands, or preſently after their genital parts would have faln into a gangrene, and total mortification; but they kil'd them all with their daggers, and cut their throats. See now their great crueltie and perfidiouſneſs, let him truſt to it that will. Now to return to my purpoſe, beeing lead from the Caſtle to the Citie with Monſieur *de Martigues*, there was a Gentleman of the Duke of *Savoyes*, who asked mee if Monſieur *de Martigues* wound was curable, I anſwered not; who preſently went and told the Duke of *Savoy*; now I thought hee would ſend Phyſicians and Surgeons to viſit and dreſs my Said Monſieur *de Martigues*: in the mean time I thought with my ſelf whether I ought to make it nice, and not to acknowledg my ſelf a Surgeon, for fear leſt they ſhould retein mee to dreſs their wounded, and in the end they would know I was the King's Surgeon, and that they would make mee paie a great ranſom. On the other ſide I feared, if I ſhould not make my ſelf known to bee a Surgeon, and to have carefully dreſſed Monſieur *de Martigues*, they would cut my throat, ſo that I took a reſolution to make it appear to them hee would not die for want of good dreſſing and looking to. Soon after, ſee, there arrive divers Gentlemen accompanied with the Phyſician and Surgeon to the Emperor, and thoſe of the ſaid Duke of *Savoy*, with ſix other Surgeons following the Armie, to ſee the hurt of the ſaid Lord of *Martigues*, and to know of mee how I had dreſſed him, and with what medicines. The Emperor's Phyſician bid mee declare the eſſence of the wound, and how I had dreſt it. Now all the aſſiſtance had a verie attentive ear to know if the wound were mortal or not; I began to make a diſcourſ that Monſieur *de Martigues* looking over the wall to perceiv them that did undermine it, received a ſhot from an Arquebuſ quite through the bodie; preſently I was called to dreſs him, I ſaw hee caſt blood out of his mouth, and his wounds. Moreover hee had a great difficultie of breathing, and caſt out winde by the ſaid wounds with a whiſtling, in ſo much that it would blow out a candle, and hee ſaid, hee had a moſt ſharp pricking pain at the entrance of the bullet. I do beleev and think it might bee ſom little pieces of bones which prickt the Lungs. When they made their Syſtole and Diaſtole, I put my finger into him; where I found the entrance of the bullet to have broken the fourth Rib in the middle, and ſcales of bones which the ſaid bullet had thruſt in, and the out-going of it had likewiſe broken the fift Rib with pieces of bones which had been driv'n from within outward; I drew out ſom, but not all, becauſ they were verie deep and adherent. I put in each wound a Tent, having the head verie large, tied with a thred, leſt by the inſpiration it might bee drawn into the capacitie of the *Thorax*, which hath been known by experience to the detriment of the poor wounded; for beeing faln in, it cannot bee taken out, which is the cauſ that engender's putrefaction, a thing contrarie to nature. The ſaid Tents were annointed with a medicine compoſed of yelks of eggs, *Venice*-Turpentine, with a little oil of Roſes: My intention for putting the Tents was to ſtaie the flux of blood, and to hinder that the outward air did not enter into the breſt, which might have cooled the Lungs and by conſequent the heart. The ſaid Tents were alſo put, to the end that iſſue might bee given for the blood that was ſpilt within the *Thorax*. I put upon the wound great Emplaſters of *Diacalcitheos* in which I had relented oil of Roſes and Vineger to the avoiding of inflammation, then I put great ſtupes of *Oxycrate*, and bound him up, but not hard, to the end hee might have eaſie reſpirations; that don, I drew from

him five porrengers of blood from the Baſilick vein of the right arm, to the end, to make revulſion of the blood which run's from the wounds into the *Thorax*, having firſt taken indication from the wounded part, and chiefly his forces, conſidering his youth and his ſanguine temper; Hee preſently after went to ſtool, and by his urine and fiege caſt great quantitie of blood. And as for the pain which hee ſaid hee felt at the entrance of the bullet, which was as if hee had been pricked with a bodkin, that was becauſ the Lungs by their motion beat againſt the ſplinters of the broken Rib. Now the Lungs are covered with a coat comming from the membrane called *Pleura*, interweaved with nervs of the *ſixt Conjugation* from the brain, which was cauſ of the extreme pain hee felt; likewiſe hee had great difficultie of breathing, which proceeded from the blood which was ſpilt in the capacitie of the *Thorax*, and upon the *Diaphragm*, the principal inſtrument of reſpiration, and from the dilaceration of the muſcles which are between each Rib, which help alſo to make the exſpiration and the inſpiration; and likewiſe becauſ the Lungs were torn and wounded by the bullet, which hath cauſſed him ever ſince to ſpit black and putrid blood in coughing. The fever ſeazed him ſoon after hee was hurt, with faintings and ſwoonings. It ſeemed to mee that the ſaid fever proceeded from the putredinous vapors ariſing from the blood which is out of his proper veſſels, which hath faln down, and will yet flow down. The wound of the Lungs is grown great and will grow more great, becauſ it is in perpetual motion, both ſleeping and waking, and is dilated and compreſt to let the air to the heart, and caſt fuliginous vapors out: by the unnatural heat is made inflammation, then the expulſive virtue is conſtreined to caſt out by cough whatſoever is obnoxious unto it: for the Lungs cannot bee purged but by coughing, and by coughing the wound is dilated, and grow's greater, from whence the blood iſſues out in great abundance, which blood is drawn from the heart by the vein arterial to give them nouriſhment, and to the heart by the *vena cava*; his meat was barlie-broth, ſtued prunes, ſomtimes *panado*; his drink was Ptiſan: Hee could not lie but upon his back which ſhewed hee had a great quantitie of blood ſpilt within the capacitie of the *Thorax*, and beeing ſpread or ſpilled along the ſpondyls, doth not ſo much preſs the Lungs as it doth beeing laid on the ſides or fitting.

What ſhall I ſaie more, but that the Said Lord *Martigues* ſince the time hee was hurt hath not repoſed one hour onely, and hath alwaies caſt out bloodie urines and ſtoǫls. Theſe things then *Meſſieres* conſidered, one can make no other prognoſtick but that hee will die in a few daies, which is to my great grief. Having ended my diſcourſ, I dreſt him as I was wont; having diſcovered his wounds, the Phyſicians and other aſſiſtants preſently knew the truth of what I had ſaid.

The ſaid Phyſicians having felt his pulſ and known his forces to bee almoſt ſpent and aboliſhed, concluded with mee that in a few daies hee would die; and at the ſame inſtant went all toward the Lord of *Savoy*, where they all ſaid, that the ſaid Lord *Martigues* would die in a ſhort time; hee anſwered, it were poſſible if hee were well dreſt hee might eſcape: Then they all with one voice ſaid, hee had been verie well dreſt, and ſolicited with all things neceſſarie for the curing of his wounds, and could not bee better, and that it was impoſſible to cure him, and that his wound was mortal of neceſſitie. The Monſieur *de Savoy* ſhewed himſelf to bee verie much diſcontented and wept, and asked them again if for certain they all held him deplored and remedileſs, they all anſwered, yes. Then a certain *Spaniſh* impoſtor offered himſelf, who promiſed on his life that hee would cure him, and if hee failed to cure him, they ſhould cut him in an hundred pieces; but hee would not have anie Phyſicians, Surgeons, or Apothecaries with him. And at the ſame inſtant the Said Lord of *Savoy* told the Phyſicians and Surgeons they ſhould not in anie wiſe go anie more to ſee the Said Lord of *Martigues*. Alſo hee ſent a Gentleman to mee to forbid mee upon pain of life not to touch anie more the Said Lord of *Martigues*, which I promiſed not do; wherefore I was verie glad, ſeeing hee ſhould not die in my hands, and commanded the ſaid Impoſtor to dreſs the ſaid Lord of *Martigues*. And that hee ſhould have no other Phyſicians nor Surgeons but him; hee came preſently to the ſaid Lord of *Martigues*, who told him,

*Sènor Cavallero el ſenor Dugue me ha mandado que venieſſe á curar voſtra herida, yo os juro á Dios que antes de achio dias yo os haga ſubir á Cavallo con la lanſa en puno contaſque no ago que yo qǫos togue, Comereis y bibereis to das comidas que fueren de voſtro guſto y yo hare la dieta pro V. m.y deſto os de veu aſeguirar ſobre de mi, yo he ſanado mun hos que tenian magores heridas que la voſtra.* That is to ſaie, Lord *Cavalleere*, Monſieur the Duke of *Savoy*, hath commanded mee to com dreſs thy wound; I ſwear to thee by God, that before eight daies I will make thee mount on horſ-back with thy Lance in thy hand, provided that no man may touch thee but my ſelf; thou ſhalt eat and drink anie thing thou haſt a minde to, I will perform thy diet for thee, and of this thou maieſt bee aſſured upon my promiſe, I have cured divers who have had greater wounds then thine: and the Lord replied, God give you grace to do it.

Hee demanded of the Said Lord a ſhirt, and tore it in little rags, which hee put a croſs, muttering and murmuring certain words over the wounds; and having dreſt him, permitted him to eat and drink what hee would, telling him hee would obſerv a diet for him, which hee did, eating but ſix prunes and ſix bits of bread at a meal, and drinking but beer. Notwithſtanding, two daies after, the Said Lord of *Martigues* died; and my *Spaniard*, ſeeing of him in the Agonie, eclip'ſt himſelf and got away without bidding farewel to anie bodie; and I beleev if hee had been taken, hee had been hang'd for his falſ promiſes, which hee had made to Monſieur the Duke of *Savoy*, and to divers other gentlemen.

Hee died about ten of the clock in the morning, and after dinner, the Said Lord of *Savoy*, ſent Phyſicians, and Surgeons, and his Apothecarie, with a great quantitie of Drogues, to embalm him; they came accompanied with divers Gentlemen and Captains of the Armie.

The Emperor's Surgeon came neer to mee, and praied mee kindly to open the bodie; which I refuſed, telling him I was not worthie to carrie his plaſter-box after him: hee praied mee again, which then I did for his ſake, if it ſo liked him. I would yet again have excuſed my ſelf, that ſeeing hee was not willing

willing to embalm him,that hee would give this charge to another Surgeon of the companie; hee made mee yet anſwer,that hee would it ſhould bee I,and if I would not do it,I might hereafter repent it:knowing this his affection,for fear hee ſhould not do mee anie diſpleaſure,I took the raſor and preſented it to all in particular, telling them I was not well practiſed to do ſuch operations which they all refuſed.

The bodie beeing placed upon a table,truely I purpoſed to ſhew them that I was an Anotomiſt,declaring to them divers things,which ſhould bee here too long to recite.I began to tell all the companie that I was ſure the bullet had broken too ribs,and that it had paſs'd through the Lungs, and that they ſhould finde the wound much enlarged, becauſ they are in perpetual motion, ſleeping or waking, and by this motion the wound was the more dilacerated. Alſo that there was great quantitie of blood ſpilt in the capacitie of the breſt, and upon the midriff, and ſplinters of the broken ribs which were beaten in at the entrance of the bullet,and the iſſuing forth of it,had carried out. Indeed all which I had told them was found true in the dead bodie.

One of the Phyſicians asked mee,which way the blood might paſs to bee caſt out by urine, beeing conteined in the *Thorax*.I anſwered him that there was a manifeſt conduit,which is the *Vena Azygos*,who having nouriſh'd the ribs,the reſt of the blood deſcend's under the *Diaphragm*,& on the left ſide is conjoined to the emulgent vein, which is the waie by which the matter in *pleureſies* and in *Empiema*,do manifeſtly emptie themſelvs by urine and ſtool. As it is likewiſe ſeen, the pure milk of the breſts of women newly brought to bed,to deſcend by the *Mammillarie*-Veins, and to bee evacuated downwards by the neck of the womb without beeing mixt with the blood.And ſuch a thing is don (as it were by a miracle of nature)by her expulſive and ſequeſting virtue,which is ſeen by experience of two glaſs-veſſels called Mountwine; let the one bee filled with water,and the other with Claret-wine, and let them bee put the one upon the other, that is to ſaie,that which ſhall bee filled with water, upon that which ſhall bee filled with wine; and you ſhall apparently ſee the wine mount up to the top of the veſſel quite through the water, and the water deſcend a traverſ the wine, and go to the bottom of the veſſel without mixture of both; and if ſuch a thing bee don ſo exteriorly and openly to the ſenſ of our eie, by things without life: you muſt believ the ſame in our underſtanding. That nature can make matter and blood to paſs, having been out of their veſſels,yea,through the bones,without beeing mingled with the good blood.

Our diſcourſ ended:I embalmed the bodie,and put it into a coffin; after that the Emperor's Surgeon took mee apart,and told mee if I would remain with him that hee would uſe mee verie well, and that hee would clothe mee anew, alſo that I ſhould ride on horſ-back. I thank'd him verie kindely for the honor hee did mee,and told him that I had no deſire to do ſervice to ſtrangers, and enemies to my countrie; then hee told mee I was a fool,and if hee were priſoner as I,hee would ſerv the devil to get his libertie. In the end I told him flat that I would not dwell at all with him.

The Emperor's Phyſician returned toward the ſaid Lord of *Savoy*,where hee declared the cauſ of the death of the ſaid Lord of *Martigues*,and told him that it was impoſſible for all the men in the world to have cured him; and confirmed again, that I had don what was neceſſarie to bee don, and praied him to win mee to his ſervice, and ſpake better of mee then I deſerved.

Having been perſwaded to take mee to his ſervice,hee gave charge to one of his ſtewards named Monſieur *du Bouchet*, to tell mee,if I would dwel in his ſervice that hee would uſe mee kindely:,I anſwered him that I thank'd him moſt humbly,and that I had reſolved not to dwel with anie ſtranger. This my anſwer beeing heard by the Duke of *Savoy*,hee was ſomwhat in choler,& ſaid,he would ſend mee to the Gallies.

Monſieur *de Vaudeville*,Governor of *Gravelin*,and Colonel of the ſeventeen Enſigns of foot, praied him to give mee to him,to dreſs him of an ulcer which hee had in his leg this ſix or ſeven years; Monſieur *de Savoy* told him becauſ I was of worth, that hee was content,and if I rankled his leg it would bee well don; Hee anſwered that if hee perceived anie thing,hee would cauſ my throat to bee cut.

Soon after,the ſaid Lord of *Vaudeville* ſent for mee by four Germane Halberdiers,which affrighted mee much, not knowing whither they led mee,they ſpake no more *French* then I high *Dutch*;beeing arrived at his lodging, hee told mee I was welcom, and that I was his; and as ſoon as I ſhould have cured him of that ulcer in his leg, that hee would give mee leav to bee gon without taking anie ranſom of mee. I told him that I was not able to paie anie ranſom.

Then hee made his Phyſician and Surgeons in ordinarie to ſhew mee his ulcerated leg; having ſeen and conſidered it, wee went apart into a chamber where I began to tell them, that the ſaid ulcer was annual,not beeing ſimple but complicated: that is of a round figure and ſcalie, having the lips hard and callous, hollow and ſordid: accompanied with a great varicous vein which did perpetually feed it; beſides a great tumor,and a phlegmonous diſtemper verie painful through the whole leg,in a bodie of cholerick complexion; as the hair of his face and beard demonſtrated. The method to cure it, (if cured it could bee) was to begin with univerſal things, that is,with purgation and bleeding,and with this order of diet,that hee ſhould uot uſe anie wine at all,nor anie ſalt meats,or of great nouriſhment,chiefly theſe which did heat the blood: afterward the cure muſt begin with divers ſcarifications about the ulcer, and totally cutting away the callous edges or lips,and giving a long or a triangular figure,for the round vvill verie hardly cure, as the Antients have left it in vvriting, vvhich is ſeen by experience. That don, the filth muſt bee mundified,as alſo the corrupted fleſh, vvhich ſhould bee don vvith *Unguentum Ægyptiacum*, and upon it a bolſter dipt in juice of Plantain and Nightſhade and *Oxycrate*, and roul the leg beginning at the foot, and finiſhing at the knee, not forgetting a little bolſter upon the *Varicous* vein, to the end no ſuperfluities ſhould flovv to the ulcer. Moreover that hee ſhould take reſt in his bed, vvhich is commanded by *Hippocrates*,vvho ſaith,that thoſe vvho have ſore legs ſhould not uſe much ſtanding or ſitting, but lying along.And after theſe things don and the ulcer vvell mundified, a plate of Lead rubbed vvith

quickſilver

quickſilver ſhould bee applied. See then the means, by which the ſaid Lord *Vaudeville* might bee cured of the ſaid ulcer; all which they found good. Then the Phyſician left mee with the Surgeon, and went to the Lord *Vaudeville*; to tell him that hee did aſſure him I would cure him, and told him that I had reſolved to do for the cure of his ulcer: whereof hee was verie joyful. Hee made mee to bee called to him, and asked mee if I was of the opinion that this ulcer could bee cured, and I told him, yes, provided hee would bee obedient to what hee ought. Hee made mee a promiſe hee would perform all things which I would appoint; and as ſoon as his ulcer ſhould bee cured, hee would give mee libertie to return without paying anie ranſom. Then I beſeech'd him to com to a better compoſition with mee, telling him that the time would bee too long to bee in libertie, if I ſtaied till hee was perfectly well, and that I hoped with in fifteen daies the ulcer ſhould bee diminiſhed more then one half, and it ſhould bee without pain, and that his Phyſicians and Surgeons would finiſh the reſt of the cure verie eaſily. To which hee agree'd, and then I took a piece of paper, and cut it the largeneſs of the ulcer, which I gave him, and kept as much my ſelf. I praied him to keep promiſe, when hee ſhould finde his buſineſs don: Hee ſwore by the faith of a Gentleman hee would doe it; then I reſolved to dreſs him well according to the method of *Galen*, which was, that after all ſtrange things were taken out of the ulcer, and that there wanted nothing but filling up with fleſh, I dreſt him but once a daie, and hee found that verie ſtrange. And likewiſe his Phyſician which was but a freſh man in thoſe affairs, who would perſwade mee with the patient, to dreſs him two or three times a daie, I praied him to let mee do what I thought good; and that it was not to prolong the cure, but on the contrarie to haſten it, for the great deſire I had to bee in libertie. And that hee would look in *Galen* in the fourth book of the compoſition of medicaments *ſecundum genera*, who ſaith, that if a medicine do not remain long upon the part it profit's not ſo much, as when it doth continue long; a thing which manie Phyſicians have been ignorant of, and have thought it hath been better to change the Plaſter often And this ill cuſtom is ſo inveterate and rooted, that the Patients themſelvs accuſe often-times the Surgeons of negligence, becauſ they do not oftner remove their emplaſters; But they are deceived. For as you have read in my works in divers places; The qualities of all bodies which mutually touch, operate one againſt another, and both of them ſuffer ſomthing, where one of them is much ſtronger then the other, by means whereof the ſaid qualities are united, they familiariſe with the time, although they are much differing from the manner, that the qualitie of the medicament doth unite, and ſomtimes becom's like to that of the bodie, which is a verie profitable thing. Therefore they ſaie hee is to bee praiſed much who firſt invented not to change the plaſter ſo often, becauſ it is known by experience, this is a good invention.

Moreover it is ſaid, great fault is committed to dreſs ulcers often in wiping of them hard, for one take's not away onely the unprofitable excrement, which is the *pus* or *Sanies* of the ulcer, but the matter whereof the fleſh is engendred; wherefore for the reaſons aforeſaid it is not needful to dreſs ulcers ſo often.

The ſaid Lord *Vaudeville*, would ſee whether that which I alleged out of *Galen* were true, and commanded the ſaid Phyſician to look there, for that hee would knovv it; hee cauſed the book to bee brought upon the table, vvhere my ſaying vvas found true, and then the Phyſician vvas aſhamed, and I verie joyful. So that the ſaid Lord of *Vaudeville* deſired not to bee dreſſed but once a daie, inſomuch that within fifteen daies the ulcer was almoſt cicatrized; the compoſition beeing made between us, I began to be merrie Hee made mee eat & drink at his Table, when there were not men of more great rank with him.

Hee gave mee a great red ſcarf, which hee commanded mee to wear. I may ſaie I was as glad of it as a dog that hath a clog, for fear hee ſhould go into the vineyard and eat the grapes. The Phyſician and Surgeon led mee through the Camp to viſit their hurt people, where I took notice what our enemies did; I perceived they had no more pieces of Cannon, but onely thentie five or thirtie pieces for the field.

Monſieur *de Vaudeville* held Monſieur *de Bauge* priſoner, the brother of Monſieur *de Martigues* who died at *Hedin*. The ſaid Lord of *Bauge* was priſoner in the Caſtle of the heap of wood belonging to the Emperor, who had been taken at *Theroüenne* by two *Spaniſh* Souldiers. Now the ſaid Lord of *Vaudeville* having looked well upon him, conceived hee muſt bee a Gentleman of ſom good houſ, and to bee the better aſſured, hee cauſſed him to have his ſtockings pulled off, and ſeeing his ſtockings and his feet clear and neat, together with his white fine ſock, it confirmed him the better in his opinion, that it was a man was able to paie ſom good ranſom. Hee demand's of the Souldiers if they would take thirtie Crowns for their priſoner, and that hee would give it to them preſently, to which they agree'd willingly, becauſ they had neither means to keep him, nor feed him; beſides they knew not his worth, therefore they delivered their priſoner into the hands of the ſaid Lord of *Vaudeville*, who preſently ſent him to the Caſtle of the heap of wood with a guard of four Souldiers with other Gentlemen priſoners of ours. The ſaid Lord *Bauge* would not diſcover himſelf, who hee was, and endured verie much, beeing kept but with bread and water, and laie upon a little ſtraw. The ſaid Lord of *Vaudeville* after the taking of *Hedin*, ſent word to the ſaid Lord *Bauge* and other priſoners, that the place of *Hedin* was taken, and the liſt of thoſe that had been ſlain, and amongſt the reſt, Monſieur *de Martigues*: and when the ſaid Lord of *Bauge* heard the ſound of the death of his brother the Lord *Martigues*, hee began much to weep and lament; his keeper demanded of him, vvhy hee made ſo manie and ſo great lamentations? Hee declared unto them that it vvas for Monſieur *de Martigues* his brother's ſake. Having underſtood that, the Captain of the Caſtle diſpatch'd a man avvaie quickly, to tell it to Monſieur *de Vaudeville* that hee had a good priſoner; vvho having received this good nevvs rejoiced greatly, and the next daie ſent mee vvith his Phyſician and four Souldiers to the Wood-caſtle to knovv if his priſoner vvould give him fifteen thouſand Crovvns for a ranſom; hee vvould ſend him free to his ovvn houſ, and for the preſent hee deſired but the ſecuri-

tie

tie of two Merchants of *Antwerp*, that hee would name. The ſaid Lord *Vaudeville* perſwaded mee that I would make his agreement with his priſoner. See then why hee ſent mee to the wooden Caſtle, and commanded the Captain of the Caſtle to uſe him well, and to put him into a Chamber hung with Tapeſtrie, and that they ſhould make the guard more ſtrong, and from that time they made him good chear at his expence.

The anſwer of the Said Lord of *Bauge* was, that to put himſelf to ranſom hee was not able; and that, that depended upon Monſieur *d'Eſtamps* his Uncle, and of Miſtris *de Breſſure* his Aunt, and than hee had not anie means to paie ſuch a ranſom. I returned with my keepers to the ſaid Lord *Vaudeville*, and told him the anſwer of his ſaid priſoner, who told mee, Perhaps hee ſhould not out at ſo good a rate, which was true, for hee was diſcovered. And forthwith the Queen of *Hungarie*, and the Duke of *Savoy* ſent word to the Lord *Vaudeville*, that this morſel was too great for him, and that hee muſt ſend him to them, (which hee did) and that hee had enough priſoners beſides him: hee was put to fourtie thouſand Crowns ranſom beſides other expenſes.

Returning toward the Said Lord *Vaudeville* I paſſed by S. *Omer*, where I ſaw their great pieces of batterie, whereof the greateſt part was flawed and broken. I came back alſo by *Theroënne*, where I did not ſee ſo much as ſtone upon ſtone, unleſs the mark of a great Church. For the Emperor gave commandment to the countrie people within five or ſix leagues about, that they ſhould emptie and carrie awaie the ſtones; inſomuch, that now one may drive a cart over the Cittie, as is likewiſe don at *Hedin*, without anie appearance of Caſtle or Fortreſs. See then the miſchief which com's by the wars.

And to return to my purpoſe, preſently after my ſaid Lord *Vaudeville* was verie well of his ulcer and little wanted of the entire cure, which was the cauſ hee gave mee my leav, and made mee bee conducted with a Paſs-port by a Trumpet to *Abbeville*, where I took poſt, and went and found the King *Henrie* my Maſter at *Auſimon*, who received mee with joie, and a good countenance.

Hee ſent for the Duke of *Guiſe* the high Conſtable of *France*, and Monſieur *d'Eſtrez*, to underſtand by mee what had paſt at the taking of *Hedin*; and I made him a faithful report, and aſſured them I had ſeen the great pieces of Batterie, which they had carried to S. *Omer*. Whereof the King was verie joyful, becauſ hee feared leſt the enemie ſhould com further into *France*. Hee gave mee two hundred Crowns to retire my ſelf to my own houſ, and I was verie glad to bee in libertie and out of this great torment and noiſ of thunder from the Diabolick artillerie, and far from the Souldiers, blaſphemers and deniers of God. I will not omit to tell here that, after the taking of *Hedin*, the King was advertiſed that I was not ſlain, but that I was a priſoner, which his Majeſtie cauſſed to bee written to my wife by Monſieur *du Goguier* his chief Phyſician, and that ſhee ſhould not bee in anie trouble of minde for mee, for that I was ſafe and well, and that hee would paie my ranſom.

The battel of *S. Quintin*, 1557.

After the battel of S. *Quintin*, the King ſent for mee to the Fere in *Tartemis* toward Monſieur the Marſhal of *Bourdillon*, to have a paſs-port by the Duke of *Savoie* to go to dreſs Monſieur the Conſtable, who was grievouſly hurt with a Piſtol-ſhot in the back, whereof hee was like to die, and remained a priſoner in his enemie's hands. But the Duke of *Savoy* would not give conſent that I ſhould go to the Said Lord Conſtable, ſaying, hee ſhould not remain without a Surgeon, and that hee doubted I was not ſent onely to dreſs him, but to give him ſom advertiſement, and that hee knew I underſtood ſomthing elſ beſides Surgerie, and that hee knew mee to have been his priſoner at *Hedin*. Monſieur the Marſhal of *Bourdillon* advertiſed the King of the Duke's denial, by which means the King writ to the ſaid Lord of *Bourdillon*, that if my Ladie, the Lord high Conſtable's wife, did ſend anie bodie of her houſ, which was an able man, that I ſhould give him a letter, and that I ſhould alſo have told him by word of mouth, what the King and monſieur the Cardinal of *Lorraine* had given mee in charge. Two daies after there arrive's a ſervant of the Lord Conſtables chamber, who brought him ſhirts, and other linnen, for which the ſaid Lord Marſhal gave paſs-port, to go to the Said Lord Conſtable; I was verie glad thereof, and gave him my letter, and gave him his leſſon, of that which his Maſter ſhould do, beeing priſoner. I had thought beeing diſcharged of my embaſſage to return toward the King. But the ſaid Lord of *Bourdillon* prai'd mee to ſtaie with him at the Fere to dreſs a great number of people who were hurt, and were thither retired after the battel; and that hee vvould ſend vvord to the King, the cauſ of my ſtaie; vvhich I did. The vvounds of the hurt people vvere greatly ſtinking, and full of vvorms vvith Gangrene and putrefaction; ſo that I vvas conſtreined to com to my knife to amputate that vvhich vvas ſpoil'd, which was not without cutting off arms and legs, as alſo to Trepan divers. Now there were not anie medicines to bee had at the Fere, becauſ the Surgeons of our Camp had carried all with them; I found out that the Chariot of the Artillerie tarried behinde at the Fere, nor had it yet been touched I prai'd the Lord Marſhal that hee would cauſ ſom of the drogues to bee delivered to mee which were in it; which hee did, and there was given to mee one half at a time: five or ſix daies after I was conſtreined to take the reſt, neither was there half enough to dreſs ſo great a number of the people, and to correct and ſtaie the putrifaction, and to kill the worms that were entred into their wounds; I waſhed them with *Ægyptiacum* diſſolved in wine and *Aqua vitæ*, and did for them, all which I could poſſible, yet notwithſtanding all my diligence, verie manie of them died.

There were Gentlemen at the Fere who had charge to finde out the dead bodie of Monſieur *de Dois-Dolphin* the elder, who had been ſlain in the battel; they praied mee to accompanie them to the Camp to finde him out amongſt the dead, if it were poſſible, which indeed was impoſſible; ſeeing that the bodies were all diſfavoured and overwhelmed with putrefaction. Wee ſaw more then half a league about us the earth covered with dead bodies, neither could wee abide long there, for the cadaverous ſents, which did ariſe from the dead bodies, as well of men as of horſes. And I think wee were the cauſ, that ſo great a num-

a number of flies,roſe from the dead bodies, which were procreated by their humiditie and the heat of the Sun, having their tails green and blew; that beeing up in the air made a ſhadow in the Sun. Wee heard them buz,or hum,which was much marvel to us. And I think it was enough to cauſ the Plague, where they alighted. (My little maſter) I would you had been there as I was,to diſtinguiſh the ordures and alſo to make report to them which were never there.Now beeing cloied and annoied in that Countrie,I prai'd Monſieur the Lord Marſhal, to give mee my leav to bee gon, and that I was affraid I ſhould bee ſick, by reaſon of my too great pains,and the ſtinks which did ariſe from the wounded bodies,which did almoſt all die, for what diligence ſoever was uſed unto them. Hee made other Surgeons to com finiſh the dreſſing of the ſaid hurt people, and I went away with his good grace and favor. Hee wrote a letter to the King, of the pains hee had taken with the poor wounded. Then I returned to *Paris*, where I found yet manie Gentlemen who had been hurt, and were there retired after the battel.

The voiage of the camp of *Amiens*.1558

THe King ſent mee to *Dourlan*, and made mee bee conducted by Captain *Govaſt* with fiftie men in arms,for fear I ſhould bee taken by the enemies. And ſeeing that in the waie wee were alwaies in alarms, I cauſſed my man to alight, making him to bee my maſter for that time,and I got upon his horſ,which carried my mail, and took his cloak and hat, and gave him my ambling Mare. My man beeing put upon her back, one would have taken him for the maſter, and I for the ſervant. Thoſe of *Dourlan* ſeeing us far off, thought wee were enemies, and let flie their Cannon-ſhot at us.Captain *Gavaſt* my conductor,made ſign with his hat, that wee were not enemies, ſo that they left ſhooting,and wee entred into *Dourlan* with great joie. Thoſe of *Dourlan* made a ſallie forth,upon the enemies five or ſix daies before,who kil'd and hurt divers of our Captains, and good ſouldiers; and amongſt the reſt Captain St.*Aubin* valiant at the ſword,whom Monſieur *de Guiſe* loved verie well,and for whom chiefly the King ſent mee thither, who beeing in the fit of a quartan fever, would needs go out to command the greateſt part of his companie: a *Spaniard* ſeeing him that hee commanded, perceived hee was a Captain, and ſhot a musket-bullet quite through his neck; my Captain St. *Aubin* thought with this ſtroak hee was dead, and with the fear (I proteſt to God) hee loſt his quartan ague, and was altogether free'd from it. I dreſſed him with *Antonie Portal* Surgeon in ordinarie to the King, and divers other Souldiers: ſom died, others eſcaped quite with the loſs of a leg,or an arm,or the loſs of an eie,and they ſaid they eſcaped good cheap, eſcape that can.When the enemie had broke their Camp, I returned to *Paris*.Here I hold my peace of my little maſter, who was more at eaſ in his houſ, then I at the Wars.

The voiage of *Harbor* of Grace.1563.

YEt I will not omit to ſpeak of the voiage of the *Harbor* of Grace; then when they made the approches to plant the Artillerie, the Engliſh who were within it kil'd ſom of our Souldiers,and divers Pioners,who undermined, who when they were ſeen to bee ſo hurt that there was no hope of curing, their fellows ſtript them and put them yet alive,in the Mines,which ſerved them for ſo much filling earth.The *Engliſh* ſeeing they could not withſtand an aſſault, becauſ they were verie much attainted with diſeaſes,and chiefly with the plague, they yielded, their lives and jewels ſaved. The King cauſſed them to have ſhips to return to *England*, beeing glad to bee out of this place infected with the Plague: the greateſt part died, and carrid the plague into *England*,and ſince have not yet been exempted. Captain *Sarlabous* maſter of the Camp, was left there in garriſon, with ſix Enſigns on foot, who had no fear of the plague, and were verie joiful to enter therein, hoping there to make good cheer. My little maſter had you been there you had don as they.

The voiage to *Rouen*.1562.

NOw for the taking of *Roüen* they kil'd divers of ours before the aſſault,and at the aſſault: the daie after they entred into the Cittie,I trepaned eight or nine, who were hurt at the breach with the ſtroaks of ſtones. There was ſo malignant an air, that divers died, yea of verie ſmall hurts, inſomuch that ſom thought they had poiſoned their bullets: thoſe within ſaid the like by us,for although they were vvell treated in their neceſſities vvithin the cittie, yet they died alſo as vvell as thoſe vvithout. The King of *Navar* vvas hurt in the ſhoulder vvith a bullet ſom few daies before the aſſault; I viſited and helpt to dreſs him, vvith his ovvn Surgeon, named M. *Gilbert* one of the chief of *Montpelier*, and others. They could not finde the bullet,I ſearch'd for it verie exactly, I perceived by conjecture,that it vvas entred by the head of the *Adjutorium*, and that it had run into the cavitie of the ſaid bone, vvhich vvas the cauſ vvee could not finde it. The moſt part of them ſaid it vvas entred and loſt vvithin the cavitie of the bodie.Monſieur the Prince of the *Rock upon Yon*, vvho intimately loved the King of *Navar*, drevv mee to one ſide,and askt mee if the vvound vvas mortal. I told him yea, becauſ all vvounds made in great joints, and principally contuſed vvounds, vvere mortal according to all Autors vvho had vvritten of them. Hee inquired of the others vvhat they thought, and chiefly of the ſaid *Gilbert*, vvho told him that hee had great hope that the king his maſter vvould bee cured, and the Said Prince vvas verie joyful Four daies after the King and the Queen-mother, Monſieur the Cardinal of *Bourbon* his brother, Monſieur the Prince of *Rock upon Yon*, Monſieur *de Guiſe*, and other great perſonages,after vvee had dreſſed the King of *Navar*, cauſſeda conſultation to bee made in their preſences,vvhere there vvere divers Phyſicians and Surgeons: each man ſaid vvhat ſeemed good unto him, and there vvas not one of them,vvho had not good hope of him,ſaying that the King vvould bee cured,& I perſiſted alvvaies on the contrarie.

Monſieur the Prince of the *Rock upon Yon* vvho loved mee, vvithdrevv mee aſide, and ſaid I vvas onely againſt the opinion of all the reſt, and praied mee not to bee obſtinate againſt ſo manie vvorthie men. I anſvvered him, that vvhen I ſavv anie good ſigns of cure, I vvould change my adviſe. Divers conſultations vvere made,vvhere I never changed my vvord, and prognoſtick, ſuch as I had made at the firſt dreſſing,and alvvaies ſaid that the arm vvould fall into a Gangrene,vvhich it did,vvhat diligence ſoever could bee had for the contrarie; and gave up his ſoul to God the eighteenth daie of his hurt. Monſieur the Prince *upon Yon*, having heard of the death of the Said King, ſent his Phyſician and Surgeon toward

mee,

mee, named *Feure* now in ordinarie to the King, and to the Queen-mother, to tell mee, that hee would have the bullet taken out, and that it ſhould bee look't for in what place ſoever it could bee found: then I was verie joyful, and told them that I was well aſſured to finde it quickly, which I did in their preſences, and divers Gentlemen. It was lodged in the verie midſt of the cavitie of the Adiutorie bone. My Said Prince having it, ſhewed it to the King and the Queen, who all ſaid my prognoſtick was found true. The bodie was laid to reſt in the Caſtle-Galliard, and I returned to *Paris* where I found divers hurt men who were hurt at the breach of *Roüen*, and chiefly *Italians*, who deſired mee verie much to dreſs them, which I did willingly; there were divers that recovered, and others died. I believ (my little maſter) you were called to dreſs ſom of them, for the great number there was of them.

The voiage of the battel of *Dreux*. 1592.

THe daie after the battel given at *Dreux*, the King commanded mee, to go dreſs Monſieur the Count of *Eu*, who had been hurt with a Piſtol-ſhot in the right thigh, neer the joint of the hip; which fractured and broke the *Os femoris* in divers places, from whence divers accidents did ariſe, and then death, which was to my great grief. The daie after my arrival I would go to the field, where the battel was given, to ſee the dead bodies; I ſaw a league about, all the earth covered, where there was by eſtimation five and twentie thouſand men and more. All which were diſpatch'd in the ſpace of two hours. I would (my little maſter) for the love I bear you, that you had been there to recount it to your ſcholars and to your children. Now in the mean time while I was at *Dreux* I viſited and dreſt a great number of gentlemen and poor ſouldiers, and amongſt the reſt manie *Swiſſer*-Captains, I dreſſed fourteen in one chamber onely all hurt with Piſtol-ſhot, and other inſtruments of diabolical fire, and not one of the fourteen died. Monſieur the Count of *Eu* beeing dead, I made no long tarrying at *Dreux*: there came Surgeons from *Paris* who performed well their dutie toward the hurt people, as *Pigray*, *Cointeret*, *Hubert*, and others; and I returned to *Paris*, where I found divers gentlemen wounded, who had retired themſelvs thither after the battel to bee dreſt of their hurts.

The voiage of the battel of *Moncontour*, 1569.

DVring the battel of *Moncontour* King *Charls* was at *Pleſsis* the Towers, where hee heard they had won it; a great number of hurt gentlemen and Souldiers withdrew themſelvs into the Cittie and ſuburbs of Towers, to bee dreſt and help'd, where the King and Queen-Mother commanded mee to ſhew my dutie with the other Surgeons, who were then in quarter, as *Pigray*, *du Bois*, *Portail*, and one named *Siret*, a Surgeon of *Towers*, a man verie skilful in Surgerie, and at that time Surgeon to the Kings brother, and for the multitude of the wounded wee were but little in repoſe, nor the Phyſicians likewiſe. Count *Mansfield* Governor of the *Duchie* of *Luxembourg*, Knight of the King of *Spains* order, was greatly hurt in the battel, in the left arm, with a Piſtol-ſhot, which broke a great part of the joint of the elbow, and had retired himſelf to *Bourgueil* neer *Towers*; beeing there hee ſent a gentleman to the King, affectionately to beſeech him to ſend one of his Surgeons to help him in his hurt. Councel was held what Surgeon ſhould bee ſent. Monſieur the Marſhal of *Montmorency* told the King and Queen, that it were beſt to ſend him his chief Surgeon, and declared to them that the Said Lord *Mansfield* was one part of the cauſ of winning the battel. The King ſaid flat hee would not that I ſhould go, but would have mee remain cloſe to him. Then the Queen-Mother ſaid, I ſhould but go and com, and that hee muſt conſider it was a ſtrange Lord, who was com from the king of *Spain*'s ſide, to help and ſuccour him. And upon this hee permitted mee to go, provided that I ſhould return quickly. After this reſolution hee ſent for mee, and likewiſe the Queen-Mother, and commanded mee to go finde the Said Lord *Mansfield* in the place, where I was to ſerv him in all I could, for the cure of his hurt; I went and found him, having with mee a letter from their Majeſties: having ſeen it, hee received mee with a good will, and from thenceforth diſcharged three other Surgeons that dreſt him; which was to my great grief, becauſ his hurt ſeemed to mee uncurable. Now at *Bourgueil* there were retired divers Gentlemen, who had been hurt at the ſaid battel, knowing that Monſieur *de Guiſe* was there, who had been alſo verie much hurt with a Piſtol-ſhot through one leg, well aſſured that hee would have good Surgeons to dreſs him, and alſo that hee, beeing kinde and liberal, would aſsiſt them with a great part of their neceſsities. And for my part, I did help and aid them with all my Art, as much as it was poſsible; ſom died, ſom recovered according to their hurts. The Count *Ringrave* died, who had ſuch a ſhot in the ſhoulder, as the king of *Navar* before *Roüen*. Monſieur *de Baſſompiere* Colonel of twelv hundred horſ, was hurt alſo in ſuch a like place as Count *Mansfield*, whom I dreſt and God cured. God ſo well bleſſed my vvork that vvithin three vveeks I led him back to *Paris*, vvhere I muſt as yet make ſom inciſions in the arm of the Said Lord *Mansfield*, to dravv out the bones vvhich vvere greatly broken and caries'd: hee vvas cured by the grace of God, and gave mee an honeſt revvard, ſo that I vvas vvell contented vvith him, and hee vvith mee, as hee hath ſince made it appear: hee vvrit a letter to the Duke of *Aſcot* hovv that hee vvas cured of his hurt, and alſo Monſieur *de Baſſompiere* of his, and divers others, vvhich I had dreſt after the battel of *Montcontour*, and counſelled him to beſeech the king of *France* my good maſter to give mee leav to go ſee Monſieur the the Marqueſs of *Auret* his brother.

Voiage of *Flanders*.

MOnſieur the Duke of *Aſcot* did not fail to ſend a Gentleman to the king vvith a letter, humbly to beſeech him to do him ſo much good and honour, as to permit and command his chief Surgeon to com to ſee the Marqueſs of *Auret* his brother; vvho had received a Musket-ſhot near the knee, vvith fracture of the bone, about ſeven months ſince, vvhich the Phyſicians and Surgeons in thoſe parts vvere much troubled to cure. The King ſent for mee and comman ded mee to go ſee the Said Lord *Auret*, and to help him in all that I could for the cure of his hurt; I told him I vvould emploie all all that little knovvledge vvhich it hath pleaſed God to give mee. I vvent then conducted by tvvo gentlemen to the Caſtle of *Auret*, vvhich is a league and a half from *Mounts* in *Hainaut*, vvhere the Said Marqueſs vvas: as ſoon as I arrived I viſited him, and told him the King had commanded mee to com to ſee him,

and

and to dreſs him of his hurt; hee told mee hee was glad of my comming, and was much bound to the King to havedon him the honor to have ſent mee to him I found him in a great fever his eies verie much ſunk, with a countenance gaſtlie and yellow, his tongue drie and rough, and all the bodie emaciated and lean, his ſpeech low like that of a dying man: then I found his thigh much ſwelled, apoſtemated, ulcerated, and caſting out a green ſtinking matter; I ſearch'd it with a ſilver probe, and by the ſame I found a cavitie neer the groin, ending in the middle of the thigh, and others about the knee, ſanious and cuniculous; alſo certain ſcales of bones, ſom ſeparated, others not. The legs were much tumified, and ſoaked with a pituitous humor, cold, moiſt, and flatulent; inſomuch that the natural heat was in the waie to bee ſuffocated, and exſtinguiſhed, and the ſaid leg crooked and retracted toward the buttocks, his rump ulcerated the bredth of the palm of an hand, and hee ſaid hee felt there a great pain and ſmarting, and likewiſe in his reins, inſomuch that hee could not take anie reſt night or daie; neither had hee anie appetite to eat, but to drink enough; it was told mee that hee fell often into faintings and ſwoonings, and ſomtimes as it were by an Epilepſie, and had oftentimes deſire to vomit, with ſuch a trembling that hee could not carrie his hands to his mouth. Seeing and conſidering all theſe great accidents, and the forces much abated; truly I was much grieved to have gon to him, becauſ mee thought there was little appearance that hee could eſcape. Notwithſtanding to give him courage and good hope, I told him, that I would quickly ſet him on foot by the grace of God, and the Phyſician's and Surgeon's help. Having ſeen him, I went a walking into a Garden, where I praied to God that hee would give mee the grace to cure him, and that hee would give a bleſſing to our hands and medicaments, to combate againſt ſo manie complicated maladies. I bethought in my minde the waies I muſt keep to do it. They called mee to dinner, I entred into the kitchin where I ſaw taken out of a great pot, half a Mutton, a quarter of Veal, three great pieces of Beef, and two pullets, and a great piece of Bacon, with great ſtore of good Herbs. Then I ſaid to my ſelf this broth was full of juice, and of good nouriſhment; After dinner all the Phyſicians and Surgeons aſſembled, wee entred into conference in the preſence of Monſieur the Duke of *Aſcot*, and ſom Gentlemen that did accompanie him; I began to tell the Surgeons that I marvelled much they had made no apertions in the Marqueſs's thigh, which was all apoſtumated, and the matter that iſſued out was foul and ſtinking, which ſhewed it had a long time lurked there, and that I had found with my probe a *Caries* in the bone, and ſmall ſcales which were alreadie ſeparated; they made mee anſwer, hee would never give conſent. and likewiſe it mas almoſt two months ſince they could win him to put on clean ſheets on his bed, neither durſt anie one ſcarce touch the coverlet hee felt ſo great pain. Then ſaid I, for to cure him, wee muſt touch other things then the coverlet of the bed. Each one ſaid what hee thought beſt of the Lord's grief, and for concluſion held it altogether deplorable. I told them there was yet ſom hope, becauſ of his youth; and that God and nature do ſomtime ſuch things which ſeem to Phyſicians and Surgeons to bee impoſsible. My conſultation was, that all thoſe accidents were com by reaſon of the bullet hitting near the joint of the knee, which had broken the ligaments, tendons, and *oponeuroſes* of the muſcles which tie the ſaid joint together with the *Os femoris*; alſo nervs, veins, and arteries from whence had followed pain, inflammation, apoſteme and ulcer: and that wee muſt begin the cure by the diſeaſ, which was the cauſ of all the ſaid accidents, that is to ſaie, to make apertions, to give iſſue to the matter retei ned in the interſpaces of the muſcles, and in the ſubſtance of them: Likewiſe to the bones which cauſſed a great corruption in the whole thigh, from whence the vapors did ariſe and were carried to the heart, which cauſſed the ſyncope and the fever; and the fever an univerſal heat through the whole bodie; and by conſequent, depravation of the whol *Oeconomie*; Likewiſe that the ſaid vapors were communicated to the brain, which cauſſed the Epilepſie, and trembling, and to the ſtomach diſdain and loathing, and hindred it from doing his functions, which are chiefly to concoct and digeſt the meat, and to convert it into *Chylus*; which not beeing well concocted, they ingender crudities and obſtructions, which make's that the parts are not nouriſhed, and by conſequent the bodie drie's, and grow's lean; and becauſ alſo it did not do anie exerciſe, for everie part which hath not his motion remaineth languid, and *atropiated*, becauſ the heat and ſpirits are not ſent or drawn thither, from whence follow's mortification. And to nouriſh and fatten the bodie, frictions muſt bee made univerſally through the whole bodie, with warm linnen clothes above, below, on the right ſide: and left, and round about: to the end to draw the blood and ſpirits from within outward, and to reſolv anie ſuliginous vapors reteined between the skin, and the fleſh; thereby the parts ſhall bee nouriſhed and reſtored, (as I have heretofore ſaid in the tenth book treating of the wounds of Gun-ſhot) and wee muſt then ceaſ when wee ſee heat and redneſs in the skin, for fear of reſolving that wee have alreadie drawn, and by conſequent make it becom more lean. As for the ulcer which hee hath upon his rump, which came through too long lying upon it without beeing removed, which was the cauſ that the ſpirits could not flouriſh or ſhine in it; by the means of which there ſhould bee inflammation, apoſteme and then ulcer, yea with loſs of ſubſtance of the ſubject fleſh, with a verie great pain: becauſ of the nervs which are diſſeminated in this part. That wee muſt likewiſe put him into another ſoft bed, ard give him a clean ſhirt, and ſheets; otherwiſe all that wee could do would ſerv for nothing, becauſ that thoſe excrements and vapors of the matter reteined ſo long in his bed, are drawn in by the Syſtole and Diaſtole of the Arteries which are diſſeminated through the skin, and cauſ the ſpirits to change and acquire an ill qualitie and corruption which is ſeen in ſom that ſhall lie in a bed where one hath ſweat for the Pox, who will get the Pox by the putrid vapors which ſhall remain ſoaked in the ſheets and coverlets. Now the cauſ why hee could in no wiſe ſleep, and was as it were in a conſumption, 'twas becauſ hee ate little, and did not do anie exerciſe, and becauſ hee was grieved with extreme pain. For there is nothing that abateth ſo much the ſtrength as pain. The cauſ why his tongue was drie and fowl, was through the vehemencie of the heat of the fever, by the vapors which aſcended

through

through the whole bodie to the mouth. For as wee ſaie in a common proverb, when the oven is well heat, the throat feel's it. Having diſcourſed of the cauſſes and accidents, I ſaid they muſt bee cured by their contraries, and firſt wee muſt appeaſ the pain, making apertions in the thigh to evacuate the matter reteined, not evacuating all at a time for fear left by a ſudden great evacuation there might happen a great decaie of ſpirits which might much weaken the patient and ſhorten his daies. Secondly, to look unto the great ſwelling and cold of his leg, fearing left it ſhould fall into a Gangrene; and that actual heat muſt bee applied unto him, becauſ the potential could not reduce the intemperature *de potentia ad actum*; for this cauſ hot bricks muſt bee applied round about, on which ſhould bee caſt a decoction of nerval herbs boiled in wine and vineger, then wrapt up in ſom napkin, and to the feet an earthen bottle filled with the ſaid decoction, ſtopt and wrapt up with ſom linnen clothes; alſo that fomentations muſt bee made upon the thigh, and the whole Leg, of a decoction made of Sage, Roſemarie, Tyme, Lavender, flowers of Camomile, Melilot, and red-Roſes boiled in white-Wine, and a *Lixivium* made with Oke-aſhes, with a little Vineger, and half an handful of ſalt. This decoction hath virtue to attenuate, inciſe, reſolv and drie the groſs viſcous humor. The ſaid fomentations muſt bee uſed a long while, to the end there may bee a greater reſolution; for beeing ſo don a long time together, more is reſolved then attracted, becauſ the humor conteined in the part is liquified, the skin and the fleſh of the muſcles is rarified. Thirdly, that there muſt bee applied upon the rump a great emplaſter made of the red deſiccative and *unguentum Comitiſſæ* of each equal parts incorporated together, to the end to appeaſ his pain and drie up the ulcer, alſo to make him a little doun-pillow which might bear his rump aloft without leaning upon it. Fourthly, to refreſh the heat of his kidnies one ſhould applie the unguent called *Refrigerans Galeni* freſhly made, and upon that the leavs of water-Lilies. Then a napkin dipt in *Oxycrate*, wrung out and often renewed: and for the corroboration and ſtrengthening of his heart a refreſhing medicine ſhould bee applied made with oil of *nenuphar*, and unguent of Roſes and a little ſaffron diſſolved in Roſe-vineger, and Triacle ſpread upon a piece of Scarlet: For the *Syncope* which proceeded from the debilitation of the natural ſtrength troubling the brain. Alſo hee muſt uſe good nouriſhment full of juice, as rere eggs, Damask-prunes ſtewed in wine and ſugar, alſo *Panado* made of the broth of the great pot (of which I have alreadie ſpoken) with the white fleſhie parts of Capons, and Partridg-wings minced ſmall, and other roſt-meat eaſie of digeſtion, as Veal, Goat, Pigeon, Partridg, and the like. The ſauce ſhould bee Orenges, Verjuice, Sorrel, ſharp Pomgranats; and that hee ſhould likewiſe eat of them boiled with good herbs; as Sorrel, Lettuce, Purſlain, Succorie, Bugloſs, Marigolds, and other the like. At night hee might uſe cleanſed Barlie with juice of *Nenuphar* and Sorrel, of each two ounces, with five or ſix grains of *Opium* and of the four cold ſeeds bruiſed, of each half an ounce, which is a remedie nouriſhing and medicinal, which will provoke him to ſleep: that his bread ſhould bee of Meſlin, neither too new, nor too ſtale; and for the great pain of his head, his hair muſt bee cut, and rub his head with *Oxirrhodinum* luke-warm, and leav a double-cloth wet therein upon it; likewiſe ſhould bee made for him a frontal of oil of Roſes, *Nenuphar*, Poppies, and a little *opium* and Roſe-Vineger, and a little Camphir and to renew it ſomtimes. Moreover one ſhould cauſ him to ſmel to the flowers of Henbane and *Nenuphar* bruiſed with Vineger, Roſe-water and a little Camphir wrapped in a handkerchef, which ſhall bee often and a long time held to his noſe, to the end that the ſmell may bee communicated to the brain, and theſe things to bee continued, till that the great inflammation and pain bee paſt, for fear of cooling the brain too much. Beſides one may cauſ it to rain artificially in powring down from ſom high place into a kettle, and that it may make ſuch a noiſ that the patient may hear it, by theſe means ſleep ſhall bee provoked on him. And as for the retraction of his leg that there was hope to redreſs it, when evacuation was made of the matter and other humors conteined in the thigh, which by their extention (made by repletion) have drawn back the leg; which might bee remedied in rubbing the whole joint of the knee with *unguentum Dialthæa* and oil of Lilies, and a little *aqua vitæ*, and upon it to bee laid, black-wool with the greaſ thereof. Likewiſe putting in the ham of a feather-pillow folded in double, and by little and little to make his leg to ſtretch out. All which my diſcourſ was well approoved of by the Phyſicians and Surgeons. the conſultation ended wee went to the ſick patient, and I made him three apertions in his thigh, from whence iſſued out great quantitie of matter and *Sanies*; and at the ſame time I drew out ſom ſcales of bones, nor would I let out too much abundance of the ſaid matter for fear of too much decaying his ſtrength: Then two or three hours after I cauſſed a bed to bee made near his own, where there were clean white ſheets, then a ſtrong man lifted him into it, and rejoiced much in that hee was taken out of his foul ſtinking bed. Soon after hee demanded to ſleep, which hee did almoſt four hours, where all the people of the houſ began to rejoice, chiefly Monſieur the Duke of *Aſcot* his brother.

The daies following I made injections into the bottom of the cavities of the ulcer, made with *Egyptiacum*, diſſolved ſomtimes in *aqua vitæ*, and ſomtimes in wine. I applied to mundifie and drie the ſpongie and looſ fleſh, bolſters; at the bottom of the ſinuoſities, hollow tents of lead, that the *Sanies* might have paſſage out; and upon it a great Emplaſter of *Diacalcitheos* diſſolved in wine: likewiſe I did rowl it with ſuch dexteritie, that hee had no pain, which beeing appeaſed the fever began much to diminiſh. Then I made him drink wine moderately allaied with water, knowing that it reſtore's and quicken's the ſpirits: and all the things which wee reſted on in the conſultation were accompliſht, according to time and order; and his pains and fever ceaſed, hee began to grow better and diſcharged two of his Surgeons, and one of his Phyſicians, ſo that wee were but three with him. Now I remained thereabout two months, which was not without ſeeing divers ſick people, as well rich as poor, which came to mee three or four leagues about. They gave meat and drink to the needie, all which hee recommended to mee, and praied

mee alſo for his ſake to help them. I proteſt I did not refuſe anie one, and did to them what I poſſibly could, whereof hee was joyful. Then when I ſaw hee began to mend, I told him hee muſt have a conſort of Violons and a Jeſter to make him merrie, which hee did: in one month wee ſo wrought, that hee could hold himſelf up in a chair, and made himſelf to bee carried and walk in his garden, and at the gate of his Caſtle to ſee the people paſs by. The Countrie people of two or three leagues about, knowing they could ſee him, came the feaſt daie male and female, to ſing and dance pell mell, in joie of his amendment, all beeing verie glad to ſee him, which was not don without good laughing and drinking. Hee caus'd ſtill a barrel of beer to bee given them, and they drank all merrily to his good health. And the Citizens of *Mont Hainaut* and other gentlemen neighbors came to ſee him in admiration, as a man comming from the tomb. And as ſoon as hee began to mend, hee was not without companie, and as one went out another came in to viſit him: his table was alwaies well covered. Hee was greatly loved of the Nobilitie, and of the common people, as well for his liberalitie as by reaſon of his beautie, and honeſtie, having a pleaſant look and a gracious ſpeech, inſomuch that thoſe that beheld his face were conſtrained to love him. The chief of the Cittie of *Monts* came on Saturdaie to beſeech him to permit mee to go to *Mons* where they had a great deſire to feaſt and make mee good chear for his ſake. Hee told them hee would praie mee to go there, which hee did. But I made them anſwer that they ſhould not do mee ſo much honor, as alſo that they could not give mee better chear then I had with him. And hee praied mee again affectionately to go thither, and that I ſhould do that for his ſake, to which I agree'd. The daie after they fetcht mee with two Coaches, and beeing arrived at *Monts* wee found the dinner readie, and the chief of the Cittie with their wives, ſtaied for mee with a good will. Wee went to the Table and they placed mee at the upper end, and drank all to mee, and to the health of Monſieur *D'auret*, ſaying that hee was verie happie, and they likewiſe to have obteined mee to take him in hand, for that they knew that in this companie, hee was greatly honored and loved. After dinner they led mee back to the Caſtle of *Auret*, where Monſieur the Marqueſs ſtaied for mee with great exſpectation to recount unto him, what wee had don in our banquet, I told him that all the companie had drank divers times to his health; in ſix weeks hee began to uphold himſelf a little with crutches, and to grow verie fat and get a livelie natural colour. Now hee had a deſire to go to *Beaumont* which is the dwelling place of Monſieur the Duke of *Aſcot*, and made himſelf bee carried in a great chair with eight men by turns, and the Countrie folks where wee paſſed along, knowing 'twas Monſieur the Marqueſs fought and ſtrove together who ſhould carrie him, and conſtrained us to drink, but it was but Beer, but I believ had it been Wine or Hippocras they would have given it us with a verie good will, ſo much did they ſhew themſelvs joyful to ſee the Said Marqueſs, and praied all to God for him. Beeing arrived at *Beaumont* all the people came before us to do him reverence, and praied God to bleſs him, and keep him in good health. Wee entred into the Caſtle where there was more then fiftie gentlemen which the Duke of *Aſcot* had ſent for to com make good chear with his brother, who kept his table furniſht three daies together. After dinner the gentlemen ran at the Ring, plaied at Foils, and rejoiced greatly to ſee Monſieur *Auret*, becauſ they had heard hee would never com out of his bed again, or bee cured of his hurt. I was alwaies at the upper end of the table, where everie one drank carouſes to him, and mee, thinking to make mee foxt, which they could not do: For I drank but according to my old cuſtom. A few daies after wee returned back and took leav of Madam the Dutcheſs of *Aſcot*, who took a Diamond ring from her finger which ſhee gave mee, acknowledging I had verie well dreſt her brother; which Diamond was better worth then fiftie Crowns. Monſieur *Auret* grew ſtill better and better, and walked all alone round about his garden with crutches. I beg'd leav of him divers times to com awaie to *Paris*, declaring that his Phyſician and Surgeon would well do the reſt that remained, for the cure of his grief. And now to begin a little to eſtrange my ſelf from him, I praied him to give mee leav to go ſee the Cittie of *Antwerp*, which hee willingly accorded to: and commanded his Steward to conduct mee thither accompanied with two pages: wee paſſed through *Malignes* and *Bruxelle*, where the chief of the Cittie praied the Said Steward, that at our return they might hear of it; and that they had a great deſire to feaſt mee, as they of *Monts* had don. I thank'd them moſt kindely, and told them that I was not worthie of ſuch honor; I was two daies and a half to ſee the Cittie of *Antwerp*, where ſom Merchants knowing the Steward, praied him to do them the honor, that they might beſtow a dinner or ſupper upon us. There was ſtriving who ſhould have us, and were all verie joiful to hear of the good health of the Marqueſs of *Auret*, doing mee more honor then I exſpected. To conclude, wee came back to the Marqueſs making good cheer, and within five or ſix daies I asked my leav of him, which hee granted with great grief, and gave mee an honeſt Preſent, and of great value, and made mee bee conducted by the ſaid maſter of his houſ and tvvo Pages, even to my houſ at *Paris*.

I have forgot to tell you, that the *Spaniards* have ſince ruined, and demoliſht his Caſtle of *Auret*, ſack't, pillag'd, rifled and burnt all the houſes, and Villages belonging unto him, becauſ hee vvould not bee of their ſide, in the ſlaughters and ruines of the Lovv Countries.

The voiage of *Bourges*, 1562.

THe King vvith his Camp remained not long at *Bourges*, but thoſe vvithin yielded it up, and vvent out vvith their jevvels ſaved. I knovv nothing vvorthie of memorie, but that a boie of the Kings privie kitchin, vvho beeing neer the vvalls of the Cittie before the compoſition vvas made, cried vvith a loud voice, Hugue not, huguenot, ſhoot here, ſhoot here having his arms lifted up, and his hand ſtretched out; a ſouldier ſhot his hand quite through vvith a bullet: having received his ſtroak, hee came and found mee out to dreſs him. My Lord high-Conſtable, ſeeing the boie to have his hand all bloodie, and all rent and torn; demanded of him vvho had hurt him. Then there vvas a Gentleman vvho ſavv the ſhot made, ſaid it vvas vvell beſtovved becauſ hee cried, *Huguenot*, ſhoot here, ſhoot here.

here. Then the Said Lord Conſtable ſaid this *Huguenot* was a good musketeer, and pare a pittiful minde, for it was verie likelie if hee would have ſhot at his head, hee might have don it more eaſily then in the hand. I dreſs'd the ſaid Cook who was verie ſick, but at length was cured, but with lameneſs of his hand, and ever ſince his companions call him *Huguenot*; hee is living.

The battel of S. *Denis*, 1567

AND as for the battel of Saint *Denis* there were divers ſlain as well on one ſide, as on the other: ours beeing hurt, went back to *Paris* to bee dreſſed together with the priſoners who were taken, whereof I dreſſed a great part. The King commanded mee, by the requeſt of the Ladie high-Conſtable, to go to her houſ to dreſs my Lord, who had received a Piſtol-ſhot in the middle of the ſpondils of his back, whereby hee preſently loſt all ſenſ and motion of thighs and legs, with retention of excrements, not beeing able to caſt out his Urine, nor anie thing by the fundament, becauſ that the ſpinal marrow, (from whence proceed the ſinews to give ſenſ and motion to the inferiour parts,) was bruiſed, broken, and torn by the vehemence of the bullet. Hee likewiſe loſt his reaſon, and underſtanding, and in a few daies hee died. The Surgeons of *Paris* were a long time troubled to dreſs the ſaid wounded people, I believ (my little maſter) that you ſaw ſom of them. I beſeech the great God of victories, that wee may never bee emploied in ſuch evil encounters and diſaſters.

The voiage of *Bayonne*, 1564.

NOW I ſaie moreover, what I did in the voiage with the King to *Bayonne*, where wee have been two years and more to compaſs all this Kingdom, where in divers Citties and Villages I have been called into conſultations for divers diſeaſes, with the deceaſed Monſieur *Chaplain* chief Phyſician to the King and Monſieur *Chaſtellan* chief to the Queen-Mother, a man of great honor and knowledge in Phyſick and Surgerie: making this voiage I was alwaies inquiſitive of the Surgeons if they had marked anie rare thing of remark intheir practice, to the end to learn ſom new thing. Beeing at *Bayonne* there happened two things of remark for the young Surgeons. The firſt was, that I dreſt a Spaniſh Gentleman, who had a grievous great impoſtume in his throat: hee came to have been touched by the deceaſed King *Charls* for the Evil. I made inciſion in his Apoſteme, where there was found great quantitie of creeping worms as big as the point of a ſpindle, having a black head; and there was great quantitie of rotten fleſh. Moreover there was under his tongue an impoſtume called *Ranula*, which hindred him to utter forth his words, and to eat and ſwallow his meat: hee praied mee with his held up hands to open it for him if it could bee don without peril of his perſon, which I immediately did, and found under my Lancet a ſolid bodie, which was five ſtones, like thoſe which are drawn from the bladder. The greateſt was as big as an Almond and the other like little long Beans, which were five in number; in this apoſteme was conteined a ſlimie humor of a yellow color which was more then four ſpoonfuls; I left him in the hands of a Surgeon of the Cittie to finiſh his cure.

Monſieur *de Funtain* Knight of the Kings Order, had a great continual peſtilent Fever, accompanied with divers Carboncles in divers parts of his bodie, who was two daies without ceaſing to bleed at at noſe, nor could it bee ſtanch'd; and by that means the fever ceaſed with a verie great ſweat, and ſoon after the Carboncles ripened and were by mee dreſſed, and, by the grace of God, cured.

I have publiſh'd this Apologie to the end that each man may know, with what foot I have alwaies marched, and I think there is not anie man ſo tickliſh, which taketh not in good part what I have ſaid, ſeeing my diſcourſ is true, and that the effect ſheweth the thing to the eie, reaſon beeing my warrant againſt all Calumnies.

*The end of the Apologie and Voiages.*

FINIS.

# A General Table of all the chief things treated of in this VVork.


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FINIS.

# ΑΓΓΕΙΟΛΟΓΙΑ:

Or, A

Description of the Vessells in the body of

# MAN,

Of the three kinds, *i. e.*

OF THE

VEINS, ARTERIES, and NERVES,

Especially of those in the Limbs and Habit of the Body:

Whereof there are also given Anatomicall Figures,
(the largest and faireſt that ever were publiſhed with any ENGLISH Book.)

In three Tractates.

---

Translated out of the Anatomie of *Adrianus Spigelius*, by whom these parts are more largely and accurately described then by other Authors; the more ful tractation whereof, being a part of Anatomie so usefull in order to Chirurgicall Operations, hath been judged very worthy to be annexed unto this present work.

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*LONDON*,
Printed by *Richard Cotes*, for *Iohn Clark*, and are to bee sold at the lower end of Cheapside, entring into Mercers-chappell, 1649.

# The Preface.

*OF how great consequence a more perfect knowledge of Anatomie is to the Art of Physick, and Chirurgery, hath been frequently and abundantly made out by Anatomists, Physitians and Chirurgeons, upon occasion, in their severall writings; though the thing it self speak so plainly in its own behalf, that much need not be said in this kind. The case is plain, that with the like facility and successe may a Mariner, making out some unknown land, steer his course through the main Ocean, where nothing but sea and skie appears, without the help of his Card and Compasse; as a Physician judg of the naturall action, or preternaturall affect of any part of the body; or a Chirurgeon institute any operation about the same, without the Anatomicall knowledge thereof; and therefore no more shall be said to this effect. Anatomie may be very commodiously reduced to four distinct kinds, or distinguished according to so many principall parts.* 1. Σπλαγχνολογία, *Splanchnologie; that is, the description of the Bowels contained in the three Cavities or Bellies of the body; the lower, middle, and supreme.* Οστεολογία, *Osteologie, which is the description of all the bones of the body.* 3. Μυολογία, *Myologie, being the Anatomicall history of all the Muscles.* 4. Αγγειολογία, *Angeiologie, describing all the Vessells of the body: i. e. the Veins, Arteries, and Nerves; these last, though having no sensible cavities, being reputed vessells in the account of Anatomists. Now though all these parts or kinds of Anatomie, are needfull both to Physick and Chirurgery; yet are they not all of a like necessity to both: but the first of more absolute neeessity to the Art of Physick; the other three, to Chirurgery. And therefore though all four have been treated on by the learned author of this Volume; yet in reason it could not but be advantagious and acceptable to Chirurgeons to have some farther helps in our English tongue, for improvement in the three later kinds before mentioned, or in some of them at least. Now for Osteologie, the parts themselves, or the dry bones are and may be kept at hand, for frequent view and contemplation upon them; whereby their severall Figures, Articulations, and all other particulars observable about them, may be rendred familiar; in order to practice about Fractures and Luxations: and without such Autopsie, much cannot*

*be acquired by the reading of Deſcriptions, or ſight of Delineations. Toward Myologie, there hath been a peculiar tractate of late publiſhed in Engliſh, which may be uſeful in that reſpect to thoſe who cannot peruſe Latin Authors. So that the greateſt want ſeemed to be in that kind or part of Anatomie, which is the laſt in the Enumeration,* i. e. *Angeiologie, or the Deſcription of the Veſſells; the more exact or particular knowledge whereof, eſpecially of thoſe in the Habit of the body, will appear, upon a true accompt, more neceſſary to the exerciſe of Chirurgicall operations, at greater certainty, and with more ſecurity, then the knowledg of the Muſcles. Upon theſe conſiderations, being conſulted by the Publiſher of this Work, what peece or Tractate in any kind, of Chirurgery or Anatomy, I thought might to good purpoſe be added thereunto; I reſolved him, that I could think of nothing more advantagious in this kind, then a fuller and more accurate Anatomicall Deſcription of the Veins, Arteries, and Nerves in the body of Man, tranſlated out of the Anatomie of* Spigelius; *adding alſo the moſt uſefull Anatomicall Figures, relating to the ſaid Deſcriptions, of the ſame largeneſſe as they are in the Editions of the ſaid Author in* folio; *which were firſt taken out of* Veſalius, *and are the largeſt and faireſt that are extant: the caſe being here, as in Mathematical inſtruments, in which, how much the largeneſſe conduceth to certainty in uſe, is well known. Accordingly he hath not ſpared for care and coſt, in procuring a Scholar every way competent to tranſlate the Deſcriptions of theſe parts, out of the forementioned author; and an able Artificer to cut the Figures. And as the werk is now accompliſhed, I doubt not but good improvement may be made thereof, by ſuch Chirurgeons, as being not able to make uſe of the Originall, ſtand in need of ſuch helps, if they will not be wanting to themſelves for induſtry in the uſe hereof.*

*J. G.*

THE

# The first Treatise,
## Concerning
# The VEINES.

### CHAP. I.

*Reckons up the branches or propagations of the* vena portæ *or the Gate-vein, and explains an Aphorism of* Hippocrates, *that makes very much to the purpose.*

Note that the Letters, which are enclosed thus [ ] refer to the particular tables at the end of this Treatise, wherein they are set.

LEt us come now to the History of the veins, in which we will begin with the *vena portæ* or gate-vein, as that which spreads not so wide and far as the common hollow one. For it is wont to be distributed only through the lowest belly, and not at all to propagate it self out of it; nor does it branch through all the parts of that, but such only as are appropriated to the nutritive faculty, namely the Liver, the bladder of Gall, the Stomach, the Spleen, the Sweet-bread, Kall, Guts, and Mesentery, for the Hollow vein sends its propagations to the rest, as the Reins, Bladder, and those parts which serve for generation.

Through what parts the Gate-vein is dispersed.

The division of the Gate-vein into the roots, trunk, branches and twigs.

But that the manner of this distribution may be more easily understood, for our better method in teaching, likening the whole vein to a tree, we will divide it into four parts, one of which we will call the Roots, as that part which is in the Liver; another the Trunk, which continues it self on and is not divided; a third the Branches into which the Trunk is divided; a fourth, Twigs or Surcles, such small veins as the Trunk shoots out at its sides; before it be divided into its branches. Which terms ought diligently to be observed, because we have endeavoured by the propriety of these words to give light to this obscure Treatise concerning the veins. But that they may more easily be committed to memory, and all that concerns this business be written with more brevity, following some very learned later Authors, we will give every part its name from the place of its insertion.

The Roots.

From the outside then of the Liver some very little hairy veins are prolonged towards its inner region, and by little and little meet together into greater branches, so that at length they become five, which again gathered together like roots about the middle of the hollow side of the Liver, but somewhat hinderly near to the back, make a notable stock or Trunk, which at length issuing forth near to those eminencies of the liver, which by the Greeks are termed πύλαι Gates, is cal'd the Gate-vein, and now deserves the name of a Trunk.

The Trunk.

This Trunk parting now from the Liver descends somewhat obliquely towards the left side, under the Gut cal'd *Duodenum*, where above the Rack-bones it gets a firm seat; but before it be divided into branches, two twigs sprout from it; the first of which being very small, arising out of the uppermost and forepart of the Trunk, as soon as it is come forth from the Liver, is scattered into the neck, and body of the bladder of Gall, or into its outer coat, with a numerous succession of very little branches, such as we have said above are called hairy veins. This twig is cald in Greek κυστικὸς, in Latin you may render it *vesicalis*, the vein of the bladder of Gall. *Vesalius* sayes there are two branches, which run through the bladder of Gall, whence they are called by some *Cysticæ gemellæ*, the twin veins of the Gall, but this makes no great matter.

The twigs, that grow out before the division of the trunk. *Cysticus.*

The second twig being greater then the former, but lower, arising from the same fore part, and more to the right, is inserted into *pylorus* or the lower mouth of stomach, into whose hinder part, which looks towards the back, it scatters many small branches, from whence it is commonly called *Gastricus*, the stomach-branch, but perhaps for memories sake it may be better termed *Pyloricus*, or branch of

*Gastricus.*

the lower mouth of the Stomach, because there are others also, which are called Stomach-branches.

The two branches.

These two twigs being thus propagated, the Trunk runs downwards, and inclining all the way somewhat to the left is divided into two notable branches, a right, and a left one: the left is some thing higher then the right, but lesser; the right lower, but greater: the left spreads it self through the stomach, the kell, one part of the *colon* or colique gut, and the spleen; the right through the Guts and Mesentery that is called *Splenica* or Spleen-vein, or the linear one; this the Mesenterick.

*Splenica.*

Circles rising from the upper part of the Spleenick-branch.

*Coronaria.*

Now the Spleen-vein, after it is thus come forth from the Trunk, is carried athwart, being underpropt by the membrane of the Kall, toward the Spleen, into which before it be consumed, it shoots forth certain twigs, both from its upper part, and from its lower; from its upper part one, that ascending obliquely to the left side of the Stomach, that looks toward the back, is divided into three propagations, of which the outermost on either side are conveyed into the Stomach, and presently scatter into more twigs; but the middle one ascending through the same hinder part spreads itself through the upper region of the Stomach, and compasses the left orifice or mouth, round about like a crown, from whence it is called στεφανιαία or *Coronaria*, the Crown-vein of the Stomach. This again sends forth continually some small branches upwards to the end of the Gullet, and others downwards through the Stomach. All this branch is called *Gastricus*, the Stomach branch, because it is the greatest, and most capacious of all those, which come to the Stomach. From the lower part of the Spleen branch arise two twigs; one, which is small, sending forth other little sprigs to the right side of the lower membrane of the Kell, and the colique Gut annexed thereunto, is commonly called *Epiploïs dextra*, you may Latin it *Omentalis*, the right Kall-vein. Another answering to that branch, which arises from the higher part of the Spleen-vein, and begets the Crown-vein, is inserted in the lower membrane of the Kall, and presently after its rise is divided into two branches, which parting one from another a great distance beget many other twigs, which are spent upon the lower membrane of the Kall, which like a Mesentery ties the colique gut to the back, as also upon that part of the colique Gut, which is so tyed. It is called *Epiploïs*, or *Omentalis postica*, the hinder Kall vein. After the Spleen-branch has thus scattered many twigs, now drawing near to the Spleen it is cleft into two branches, an upper, and a lower one; which are broken into others in the very *Parenchyma* or flesh of the Spleen. From the upper, sometimes before it enters the Spleen, sometimes when it is already entered, there sprouts forth a double or threefold twig, very famous among the writers of Physick, which they commonly call *vas breve* the short vessell, but we the venall, to distinguish it from the Arteriall vessel that answers to it: this is inserted into the left side of the bottom of the Stomach, sometimes also higher, and about the left orifice or mouth. Which is the cause why some Physitians, and commonly Anatomists too have foolishly thought, that the melancholick humor is returned from the Spleen through this vessell back into the Stomach, to provoke appetite. But you may often find bodies, in which it is altogether wanting. From the lower branch, which goes to the nether part of the Spleen, one propagation arises, which being pretty big, and notable is reflected towards the right hand, like the foregoing, and compasses the bottom of the Stomach on the left side, and also sends many little branches to the higher membrane of the Kall on the left side; it is called *Gastro-epiploïs sinistra*, the left Stomach and Kell-vein. There is also another notable branch, which is found in most to arise from the lower Spleen-branch; very seldom from the Spleen it self. This is carried downwards, and scattering twigs over all the left side of the colique Gut, goes on further by the whole length of the strait Gut, and at length determins in the membranous substance thereof, and in the fundament with many little twigs. Physitians make mention of this very often, and call it *Hæmorrhoidalis interna*, the inner emroid vein, to distinguish it from the outer, which is derived from the Hollow-vein. It is truly and properly called the Emroid vein; I say, properly, and truly, because sometimes they call by that name the veins of the nostrills, gums, and mouth, that cast forth blood, and without pain. In this large sense the Philosopher took it 3. *de part. animal.* where he makes menstruous purgation also a species of the emroids. But the Emroids properly so called by Physitians are dilatations of this vein in the fundament, caused as well by black and yellow choler, as also by a salt phlegm, as by the melancholick humor. And these are of two kinds; *Cæcæ*, blind piles, which cast out no blood, but swell out like the stone of a grape into the fundament or out of it: Others *apertæ*, open, which cast out the blood, which they contain. The learned *Hippocrates* hath left us a peculiar book, a golden one indeed, concerning the cure of these. The remaining part of the Spleen-branch is spent upon the whole Spleen, and therein is scattered into divers and very small propagations, entring the very flesh of it about the hollow, and middle line. And these are the sprigs which grow out of the Spleen-branch.

*Epiploïs Dextra.*

*Epiploïs postica.*

The division of the Spleenick-branch.

A propagation of the upper branch.

A propagation of the lower branch.

*Gastro-epiploïs sinistra.*

*Hæmorrhoidalis interna.*

1.

2.

The Mesenterick vein, or right branch of the Gate-vein is joined to the Mesentery, as soon as it comes from the back, and is divided into two chief branches, which passing through

through the Mesentery betwixt its two coats, are each of them cleft into an infinite number of small branches, and they again into less twigs, which going to the guts make up those veins so famous among Physitians, that are called the Mesaraick-veins. The first of these branches is called the right Mesenterick vein from the right side, wherein it is placed, and is likewise twofold, whence it came to pass, that *Vesalius*, and almost all others, who follow him, reckon three Mesenterick veins. This branch is inserted into the *Jejunum* or empty gut, the *Ileum*, or circled gut, the *cæcum* or blind gut, and the right side of the Colique gut, where it lies next to the reins, and liver; and although both its branches shoot forth many propagations from themselves, so that it is very hard to expresse any number of them, as well because they vary much by reason of their subjects, as also because they do not observe the very same order and course, yet it hath been observed, that for the most part there are fourteen, which afterwards are scattered into an infinite company of other twigs. These when they are come to the guts, only gape with their little mouths into their coat, and enter not the cavity it self, that being compassed about within with a certain crust. But as we have said above, that in most parts of our body, the divarications or divisions of the vessels are attended with certain glandules, partly that they may make the safer progresse, partly least they should sink down, and withall the flow and ebb of the blood so very necessary be hindered; so here also the divisions of the vessels, which are scattered through the Mesentery, are bolstered up with certain glandules, which with their propagations observe such an exact proportion, that the greater glandules do sustain the greater branches, and the less the lesser. When these glandules swell with a *Scirrhus* the vessels being prest close together, and the distribution of the chylus through the veins, and consequently of the bloud through the body being hindered; there follows a Consumption, and pining of the whole body. The left Mesenterick vein is divided into the middle part of the Mesentery, and also that part of the Colique Gut, which runs from the left region of the Stomach as far as to the strait gut. The *hæmorrhoidalis interna*, or inner Emroid vein, of which we spake a little before, sometimes arises from this vein, as *Vesalius* hath observed, which affording some sprigs to the Colique gut, at last running forward through the whole length of the strait gut, determins in the fundament. But before the Mesenterick trunk be divided into these two branches, it first sends forth two propagations, one of which is called *Gastro-epiploïs dextra*, or the Right Stomach and Kall-vein, which creeps through the right bottom of the Stomach, before, and behind, as also through the upper membrane of the Kall: the other called by others *Intestinalis*, or the Gut vein, by us the *Duodena*, reaches to the middle of the Gut *Duodenum*; and the beginning of the Empty gut or *Jejunum*, and descends all along through them.

The right Mesenterick branch.

The left Mesenterick.

Propagations that arise before the division of the Mesenterick.

*Gastro-epiploïs Dextra.*

*Intestinalis.*

The chief use of the Gate-vein is to nourish those parts, which are seated in the lowest belly, and need a thicker and more faculent bloud, such as are all those parts, which serve for nutrition. For their blood ought to be thicker, that it might be hotter, when heat is alwayes more powerfull in a thicker body: so then the Roots of the Gate-vein nourish the Liver, the Trunk nourishes the *Pancreas* or Sweet-bread; of the Twigs, the *Cysticus*, or Gall-twig nourishes the bladder of the Gall; the Spleen-branch, all the entrails, which serve for nutrition, except the Mesentery, and the Guts; the Twig *Pyloricus*, or of the lower mouth of the Stomach, the *Gastricus* or Stomach-branch, both the Stomach and Kall-veins, and the short vessell nourish the Stomach. For I do not think that the short vessell was made by nature for the carrying back of melancholick humor to the Stomach, but chiefly for its nourishments sake; when that blood, which is generated in the Spleen, is not melancholy, and excrementitious humor, but rather the best, although somewhat thicker then other bloud, and that because the parts that are to be nourished by the Spleen branch, needed a thicker bloud, then they which are to be nourished by the Mesenterick. Both the Stomach and Kall-veins nourish the upper membrane of the Kall; the right and the hinder *Epiploïs*, or the Kall-veins, the lower. The Spleen is nourished by those two branches, into which the Spleen-vein is cleft, and which enter its *parenchyma*, or flesh through its middle line: the Mesentery, and almost all the Guts by the two Mesenterick branches; the Gut *Duodenum* by the propagations called *Duodena*; but the empty Gut, the *Ileum* or circled Gut the blind Gut, or the right side of the Collique or *Colon* by the right Mesenterick-branch. The left side of the Colique, and all the strait-Gut by the hæmorrhoidall vein; but the middle part which lies under the Stomach, by the hinder Kall-vein. The second use is to attract the *Chylus*, and carry it to the Liver; whose veins are most famous for the making of bloud. But the same veins which nourish the Mesenterick branch, do also attract the *chylus*, as we shall shew you hereafter, when we shall insist upon the History of it. The third use is to empty out the excrements from the body through the Guts. Thus we see that the cholerick humor is sometimes poured forth out of the Liver through the Mesenterick-branch in the bloudy flux, and cholerick loosnes, and the melancholick dregs through the Emroid-vein. The fourth use is to help the concoction of the Liver. Thus we see that the thicker part of the *chylus*, which is called melancholy, is attracted by the spleenick branch, not that the seat of melancholy

The first use of the Gate-vein.

The second use.

The third use.

The fourth.

is in the Spleen, but that it may be more attenuated, and better concocted by the benefit of the arteries, which are moſt abounding in the Spleen, and ſo not diſturb, or hinder the concoction, which is famed to be in the veins of the Liver, as it uſually happens, that whenſoever the Spleen is troubled with any diſeaſe, the work of making bloud is preſently harmed.

The explanation of a certain Aphoriſm of *Hippocrates*.

But becauſe there has been mention made here of the Emroid-veins, it ſeemed, that it would not be unſeaſonable if I did refer to this place the explanation of a moſt excellent Aphoriſm, which is the twelfth of the ſixth Section, when it cannot be underſtood without the Hiſtory of Anatomy, and is not ſo faithfully explained by others, as was neceſſary. *Hippocrates* writes in it, αἱμορροΐδας ἰσθένει χρονίας ἢν μὴ μία φυλαχθῇ κίνδυνος ὕδρωπα ἐπιγενέσθαι ἢ φθίσιν, that is, he that is cured of old Emroids, unleſs one of them be preſerved, is in danger of falling into a Dropſie, or Conſumption. In explanation hereof we will firſt doubt of the Aphoriſm, then we will deſpute of the manner whereby a Dropſie, or Conſumption follows upon the cure of old Emroids. But we may not without cauſe doubt of the truth of it, becauſe the ſame *Hippocrates* in a Book concerning the Emroids, which I think to be very much his own, whatever *Mercurialis* ſay though otherwiſe a moſt learned man, bids us to turn the Emroids, and forbids us to leave any unburnt, but to burn them all. And truly *Aetius* in his 14. Book, deſirous to reconcile theſe two places, at thoſe words ἢν μὴ μία φυλαχθῇ, that is, unleſs one be preſerved, being overcome, thinks that a manner of diet is to be underſtood, not an Emroid, as if *Hippocrates* ſhould ſay: Thou ſhalt not cure one that hath long had the Emroids, unleſs the Patient will diligently obſerve a convenient manner of diet preſcribed by thee; for otherwiſe there is danger of his falling into a Dropſie, or Conſumption. But *Galen* in his Comment upon that Aphoriſm writes expreſly, that *Hippocrates* ſayes, that unleſs one Emroid be preſerved, ſuch danger will enſue, and makes no mention at all of diet. And, what is more, dayly experience ſufficiently witneſſes, that ſuch miſchiefs do enſue though never ſo exact a diet be kept, and the reaſon taken from the manner, wherein they happen, and which we ſhall preſently explain, does abundantly manifeſt it. Whence it is evident, that theſe two places of *Hippocrates* are left ſtill in controverſie, and contradicting one another from this anſwer of *Aetius*. But the right anſwer will be, if we ſay, that *Hippocrates* when he writes in his Book of the Emroids, that for a perfect cure they muſt all be burnt, ſpeaks not of old Emroids, but of ſuch only as are lately come, or when nature has already endeavoured to expell the humor, which was otherwiſe purged out of the Emroids ſome other way, whether it be by iſſues, or by a Fiſtula, or ſome ulcer in the Leg. For ſuch may be very well and without danger of Conſumption, or Dropſie, the rather, if the entrails be yet whole and ſound, and eſpecially if a good rule of diet follow. Nor does the cure of all old Emroids neceſſarily bring on a Dropſie or Conſumption, but only for the moſt part they threaten a danger of theſe diſeaſes to enſue, for ſometimes the melancholick matter being hurried up into the brains, there follows madneſs, as it happened to *Alcippus*, in *Hippocrates* 4. *Epidem.* For, ſayes he, this *Alcippus* having the Emroids was forbidden to be cured, for after the cure he fell madd, but an accute Feaver following it, he was recovered. For explanation of the ſecond doubt, firſt let us hear *Galen* for he in his Commentary upon the Aphoriſm, ſayes "That the Emroids come by reaſon of fæculent and me-
"lancholick bloud, which the Liver drives down to the mouths of certain veins, and ſo
"this way being ſtopt, and abundance of groſs humor burdens the Liver, and ſtifles the
"naturall heat, which being extinguiſht, no more bloud is generated, but only water,
"which nature afterwards driving it into the *abdomen*, or paunch, makes a Dopſie. But if
"the Liver ſend that abundance of melancholick humor to the Lungs, ſome veſſell being
"broken, there follows a Conſumption. This interpretation of *Galen*, beſides that it ſeems very obſcure to us, is not altogether agreeable to truth. For firſt, it is falſe in my judgment, which *Galen* ſets down in his Comment, that it is impoſſible, that the Emroids ſhould be cauſed without an abundance of fæculent and thick bloud; when it may be proved both by reaſons, and authority, that they come alſo from choler and phlegm. By
1. the authority of *Hippocrates*, who in the beginning of his Book concerning the Emroids, witneſſes that this diſeaſe is cauſed in this manner; to wit, when choler, or phlegm falling down into the veins of the Straight-Gut, heats the bloud, which is in the veins. For theſe veins being heated attract the bloud out of the little veins, that are near, and when they
2. are filled, the inward part of the Seat ſwels, and the heads of the veins appear out of it. But by reaſon it is proved thus; when madneſſes are cauſed by phlegm, or choler, as *Hippocrates* witneſſes in his Book *De Morbo Sacro*, the ſame Author in the 6. Aphoriſm, 21. profeſſes that that madneſs is taken away, if there follow ſwellings of the veins, or Emroids in thoſe that are ſo mad. Now the madneſs would not be taken away, if melancholick humor did only come forth by the Emroids; for then the cauſe of the diſeaſe would not be purged out. But I my ſelf alſo have ſeen formerly in *Germany* ſome Noblemen, that were troubled with ſalt catarrhs, afterwards recovered by a great flux of the Emroids; that I am of opinion, that not only melancholy, but alſo ſalt phlegm and choler are wont to purged out by the Emroids. Wherefore if it happen, that one, who has been long troubled

bled with the Emroids, be cured afterwards, that choler and phlegm, either breed, obſtructions in the Liver, or Spleen, or being gathered together in ſome plenty by ſtretching the veſſels contained in the *abdomen*, or paunch, breaks through them, or by their quality corrodes and eats their way out, and makes a Dropſie in the *Abdomen*; or elſe by raiſing obſtructions in the Liver, and extinguiſhing the naturall heat, generates much water, and ſerous humor in ſtead of bloud, which paſſing through the veins, make a *ſpecies* of the Dropſie called *Leucophlegmatias*; but if this humor go back to the Breaſt, or Lungs, it breaks through, or eats out their veſſels, and hence follows a ſpitting firſt of bloud, then of corrupt matter, and from thence at laſt a Conſumption, as *Hippocrates* teaches in his Aphoriſm. But in this place it is firſt of all to be obſerved, that there are two ſorts of propagations of veins, which make the Emroids: for there are ſome propagations of the Gate-vein, of which we have already treated; but there are others of the hollow-vein, which ariſe from the Iliacall branches, of which we are to ſpeak hereafter. Now if the forementioned humors, whether melancholick, or cholerick, or phlegmatick, and ſalt, flow through the propagations of the Gate-vein, the internall Emroids are cauſed, which being cured, the matter flows back into the branches of the Gate-vein, that are ſcattered through the lower Belly into which the veins being loaden with theſe humors unburden themſelves, and make a *ſpecies* of the Dropſie called *Aſcites*. But if they flow through the branches of the Hollow-vein, they cauſe the external Emroids, and theſe being cured againſt the Precept of *Hippocrates*, there is danger of a Conſumption to enſue, becauſe from hence there is an eaſie paſſage of the peccant matter through the Hollow-vein to the Lungs, nigh to the Heart. And this is that which we have of a good while obſerved, that many, who have been long troubled with Fiſtula's of the Fundament; and afterwards cured, through the ignorance of Phyſitians, have faln into a ſpitting of bloud, and then into a Conſumption. Nay we remember, that a maid was once cured by us in *Germany*, which had a Fiſtula in the middle of her Hip, and for three years had ſought help from many in vain, but being cured ſhee fell at length after three or four months into a ſpitting of much bloud. Although ſhee was ſcarſe ten years old, I let her bloud preſently in the foot of that ſide on which ſhee had been troubled with the Fiſtula, and purging her body, and laying on a cautery near the place, in which the Fiſtula had been, I eaſily freed her in this manner from imminent danger of a Conſumption. This ſpitting of bloud happened from no other cauſe, but that ſharp and cholerick matter, which when it could no longer find a way out by the Fiſtula, got up afterwards to the Lungs through the branches of the Hollow-vein. But *Hippocrates* ſayes expreſly, that there is danger of a Dropſie, or Conſumption to follow, becauſe it ſometimes falls out, that neither of theſe happen, but rather ſome other diſeaſe inſues, as it happened to *Alcippus*, who fell into a madneſſe, and from that into an acute Feaver: ſometimes alſo the bloudy flux follows, and other miſchiefs. Sometimes alſo it happens, that they who are ſo cured, are preſerved ſtill in health, by abundance of urine, ſweatings, remedies, and a good rule of diet.

## CHAP. II.

*Treats of the ſuperior, or aſcendent Trunk of the* Vena Cava, *or Hollow-vein, and the branches which it ſcatters through the Head.*

WE are now to conſider the other vein, which as we told you is called *Cava*, the Hollow one [a], which ſpreads it ſelf much wider, then the Gate-vein, as being diſtributed throughout the whole body. For its office is to nouriſh all thoſe parts of our body, which conduce not to the concoction of the food, and thoſe parts being ſpread far and wide, it is neceſſary, that the Hollow-vein alſo be very large, and extended to a great length: and becauſe they ought to be nouriſht with a thinner, and more elaborate bloud, and not ſo thick and fæculent, as that wherewith the Stomach, Spleen, and Kall are nouriſht; therefore the bloud which the Hollow-vein makes, and carries, is alſo more pure, thin and ſincere. The uſe of the Hollow-vein.

In delivering the Hiſtory of this vein, although we are not of their opinion, who derive its beginning either from the Liver, or heart, yet becauſe we muſt begin our Treatiſe of it ſomewhere, we thought fit to follow the received cuſtome of Anatomiſts, and ſo for perſpicuities ſake we ſhall alwayes ſpeak of it, as if it took its birth from the Liver. It may be added, that it ſpreads certain roots as it were in the Liver, juſt like the Gate-vein, in the Hiſtory of which when for that reaſon we took our riſe from thoſe roots, we may not without cauſe begin thence alſo with the Hollow one. But this vein although it run directly through the whole Trunk of the body, and make one very notable ſtock [D] that is drawn out through the middle, and loweſt belly, like one ſtraight line continued, or rather in manner of a channell, or conduit pipe, is notwithſtanding wont to be divided into two by reaſon of the Liver, and ſo one to be called the Aſcendent Trunk, the other the Deſcendent. For indeed that is not true, to which many perſwade themſelves, that The method to be obſerved in the Hiſtory of this Vein.

that the Hollow-vein in its going forth from the Liver, like the great Artery, when it comes out of the heart, is cleft into two Trunks; but if hereafter they be called Trunks by me, you muſt beleeve, that I do it only for orders ſake in teaching. The Aſcendent therefore or upper Trunk [A.D.] is that which ſtands about the Liver, and is terminated about the *Jugulum*, or Hollow of the Neck; but that is called the Deſcendent one [T.V.] which is beneath the Liver, and reaches down as far as the Legs. For both of them are afterwards divided into branches, of which they of the Aſcendent [m and q] are carried upwards to the Head, as the Jugular or Neck-branches; or to the Arms, as the *Brachiales* [G and I] or Arm-veins; theſe of the Deſcendent Trunk to the Legs, and are called the Crurall branches. [T]. We will ſpeak therefore of all theſe in order, ſo that we firſt deliver the Hiſtory of the Aſcendent Trunk, then of its branches, that grow up partly to the Head, partly to the Arms, after that we will come to the Deſcendent Trunk, and its branches, that are digeſted into the Legs.

The Aſcendent Trunk.

As therefore we have ſaid, that many little Veins like roots grew out of the Hollow ſide of the Liver, which alwayes by degrees inſerted into the greater veins, and all of them at length meeting together about the middle of it did make a Trunk; ſo in the ſame manner out of a circuit of the Convex ſide of the Liver a numerous propagation of veins iſſues forth, which afterwards meet together in one Trunk. This Trunk makes its way through the nervous part of its midriffe on its right ſide, and paſſing through it goes undivided to the *Jugulum*, or Hollow of the Neck, and becauſe it climbs upwards, it is commonly called the Aſcendent Trunk by them, who conceive that the Hollow-vein riſes out of the Liver. It is much greater then the Deſcendent, becauſe the upper parts are nouriſhed by it alone; but almoſt all the inferior parts, that are contained in the loweſt Belly, by the Gate-vein. But although it be not parted into any branches, untill it come to the *Jugulum*; yet before that it ſpreads ſome propagations at its ſides, and of thoſe, three notable ones. The firſt [e e] is that which is called *Phrenica*, or the vein of the Midriffe, on either ſide one, and is diſtributed throughout the whole Midriffe, which is called φρένες, with a numerous iſſue, ſending little branches to the neighbouring *Pericardium*, or purſe of the Heart, and the *mediaſtinum*, or partition of the Cheſt; which when it has now got above, and entred the Cheſt, it inclines a little to the left hand, and enters the *pericardium*, and being hidden very cloſe over againſt the eight rack-bone of the Cheſt, is very ſtrongly infixt into the Right ventricle [C] of the heart; that *Ariſtotle* did not without cauſe gueſſe, that it ſprung from hence. But before it be ſo infixed, it ſends out another propagation [b b] which is a notable one, and extends itſelf by the hinder part of the Heart, and the left ſide of it, towards the forepart, compaſſing the *baſis* of the Heart like a Crown, from whence it is called *Coronaria*, or the Crown-vein of the Heart. This ſcatters many branches through all the outer ſurface of the Heart, but eſpecially through the left ſide, as that which needed a more copious aliment then the right ſide, becauſe of the continuall, and greater motion there. But becauſe the fleſh of the Heart is hard, and ſolid, it ought therefore to be nouriſht with a thicker bloud, from whence it is, that this branch grows out of the vein, before it enters the Heart, to wit, when the bloud is ſomewhat thicker, and not yet attenuated in the cavities of the Heart. Near to the originall of this there is a little valve, or floud-gate, which hinders the bloud from flowing back to the Hollow-vein, as it might eaſily do by reaſon of the continuall motion of the Heart. When the Hollow-vein has now gotten above the Heart, it becomes leſſer, and perforates again the *Pericardium*, and forſakes the Rack-bones of the Back, and being got above the Gullet, the rough Artery, and the *aorta*, or Great Artery, (which lean ſo upon one another, that the Gullet takes hold of the bodies of the Rack-bones, the rough Artery lies upon that, and the *aorta* again upon this) it climbs upwards through the midſt of the diviſion of the Lungs, where the right part is ſeparated from the left. But becauſe by this means it could not get to the Back, and the little branches, if it ſhould have ſent forth any ſuch, had been very liable to danger of breaking, being ſo hanged up; therefore it ſends forth a third propagation [c c] as ſoon as it is got out of the *Pericardium* or purſe of the Heart. The Greeks call this vein ἄζυγος, the Latins *ſine pari*, or *carens conjuge*, without a companion, or wanting a mate, becauſe in a man there is but one, and it has no companion, or mate on the left ſide, as other veins have; though in creatures that chew the cud, it is double, and plainly to be perceived of both ſides. But it iſſues forth about the fifth Rack-bone of the Cheſt out of the hinder part of the Hollow-vein, and the right ſide, and goes downwards, not directly, but inclining a little toward the right hand is as it were reflected backwards to the Back-bone: but as ſoon as it reaches the eighth, or ninth rib, it is cleft above the Spine of the Back into two branches, which running downwards paſſe through the diviſion of the Midriffe, which is betwixt its two productions, and ſo are ſpread abroad into the loweſt Belly: Of theſe the left, which is ſometimes the greater, hiding itſelf about the tranſverſe Proceſſes of the Rack-bones, and under the left production of the midriffe and the originall of the firſt bending muſcle of the thigh, is inſerted into the left Emulgent, either near to its beginning, or (as it oft happens) into the middle of it. But the right, running on likewiſe under the membranes

Propagations of the *Aſcendent* Trunk.

*Phrenica.*

*Coronaria.*

Ἄζυγος.

branes about the transverse processes of the right side, and the right production of the *Septum* or Midriffe, and the beginning of the same first bender of the thigh, which keeps the right side, is implanted sometimes into the very Trunk of the Hollow-vein, sometimes into the first vein of the Loins. And we are indebted for this observation to the learned *Fallopius*, who would have the matter that is gathered together in the Chest, whether it be watery, or purulent and corrupt, or sanguinous, to be evacuated by the benefit of the left branch of this vein; of which notwithstanding we will say something briefly in the following Book. But this vein in its journey downwards shoots forth twigs of both sides, as well right, as left, of which the right are more notable, and larger, of which there are numbred almost alwayes ten; which run out to as many distances of the lower ribs, and make the inferiour Intercostall veins. But I say they are almost alwayes ten, because it happens very seldom, that all the distances of the ribs receive branches from this vein, the two uppermost, to wit, the first and second distance getting their furcles or twigs from the fourth branch, that is presently to be mentioned. But these twigs run straight forwards near to the lower side of the ribs, where there are cavities cut out for them, as we have taught in the second Book. And truly this place is diligently to be taken notice of by Students in Chirurgery, because of the opening of the Chest in the disease called *Empyema*, that they may know that incision is to be made in the uppermost place of the rib, because in the lower the vessels would be harmed to the great indangering of life. But these veins do not run through the whole length of the true ribs, but are terminated together with the bony part. But the propagations of the Mammary vein nourish the six distances between the gristles of the seven true ribs, as we shall tell you by and by. Yet in the Bastard ribs they run even beyond the Gristles towards the *Abdomen* or Paunch, into whose Muscles they insinuate themselves. But there are certain other little branches propagated from the same vein, by which nourishment is derived to the marrow of the Rack-bones, and the Muscles, to wit, those about which they are carried: some also are implanted into the *Mediastinum* near to the back. This vein *sine pari* without a companion, being thus constituted, the Hollow-vein ascends to the *Jugulum*, or Hollow of the Neck [D] being supported by the *Mediastinum*, and a certain soft and glandulous body, which the Greeks call θυμὸς, and is placed in the highest part of the Chest, to defend the divarications of the veins there hanging up from all danger of breaking.

The division of the Hollow-vein into the two Subclavian branches.

And here the Hollow-vein is first divided into two notable branches [E E] from which all those veins arise, that run as well to the Head, as to the Arms, or to certain Muscles of the *Abdomen*. Of these one goes to the right side, and the other to the left, which as long as they yet are in the Chest, are called *Subclavii*, subclavian branches, because they go under the *clavicula*, or Coller-bones; but as soon as they have gotten out of the Chest, and attain to the Arm-hole, they are named *Axillares*, the Axillary-veins [F]. From both of them very many propagations issue forth, some of which arise from their upper part, and some from their lower. In our recitall of them we will observe this order, that they which are neerest to the Trunk, shall be first mentioned by us; and they last, which are farthest from it.

Propagations from the lower part of the Subclavian-branches. *Intercostalis superior.*

The first propagation then issues out near the very root of the divarication or division of the Trunk, and is called *Intercostalis superior*, the upper Intercostall vein; [e] there is of either side one, which being very little, and descending along by the roots of the ribs, as far as to the third rib, sends two twigs [f f] overthwart, like the *vena sine pari*, to the two distances of the upper ribs. But if the *vena sine pari* sends its propagations to all the distances (as it sometimes happens) then it is wanting not without cause. Sometimes the same vein arises from the Trunk of the Hollow-vein, before its division into the subclavian branches.

Another vein [g] sometimes arises from the fore-part of the bifurcation; sometimes from the root of the Subclavian branch, and is double, of either side one: sometimes also only one grows out of the middle of the Trunk, before it be divided; which at length, when it has attained unto the Breast-bone, is parted into a right, and a left branch. For Nature is wont to sport, as sometimes in its other works, so especially in the rise of veins, so that they are not spread in all bodies after the same manner. But this is called *Mammaria*, the Mammary vein, which, whensoever it arises, going toward the fore-part, strives to get up to the higher part of the Breast-bone, and descends by the sides of it, and when it is come to the Breast-blade, about its sides goes out of the Chest, and runs on directly under the right Muscles of the *Abdomen*, even to the Navill, near to which it is joyned by an Anastomosis, or inoculation [10] with an Epigastrick-vein [9] that ascends and meets it; by the benefit whereof arises that notable sympathy betwixt the womb, and Breasts of women, of which we shall speak more hereafter in the eight Chapter, when we shall insist on that History of the Epigastrick-vein. But before it leave the Chest, in its descent, it distributes one branch a piece to the six distances betwixt the Gristles of the seven upper true ribs, of either side, which are terminated with the Gristles near to the end of the bony part of the ribs, in which place we told you that the branches of the vein *sine pari*, (with the extremities of which these are joyned) were ended. From these

*Mammary.*

veins,

veins, which are diſtributed in this manner to the diſtances of the Griſtles, ſome others very worthy of our notice do ariſe, which are diſſeminated both into the Muſcles, that lye upon the Breaſt, and into the Paps. Near to theſe a third [h] ariſes, and ſometimes alſo grows out of the Trunk, which is called *Mediaſtina*, becauſe it ſpreads itſelf into the *Mediaſtinum*, or membrane that cloſes up the cavity of the Cheſt, being extended all along by it, with the left Nerve of the Midriffe. The fourth [i] commonly called *Cervicalis*, or the Neck-vein, is a large vein of both ſides which running obliquely, upward, and backward, to the Tranſverſe proceſſes of the Rack-bones of the Neck, and climbing up through their holes, (from whence perhaps it might be better named *Vertebralis*) affords ſprigs to the Muſcles, that lye next upon the Rack-bones. When this vein has got above the Tranſverſe Proceſſe of the ſeventh Rack-bone, it derives a notable branch of the *Sinus* or *Canale*; in the Neck, through the hole that is made for the outlet of the Nerves; and then another, when it comes above the Proceſſe of the ſixt Spondyll, or Rack-bone, and again another, when it has left the fifth Spondyll, untill at laſt it comes to the Proceſſe of the firſt Rack-bone, which notwithſtanding it does not touch, much leſſe does it paſſe into the Skull, (as *Veſalius* would have it) near which it goes partly to the ſame *ſinus* or canale, partly it is diſtributed into the hinder parts of the Neck. For there are two long *ſinus* filled with bloud, which are made out of the hard membrane of the Brain, one of each ſide, being placed at the ſides of the marrow of the Neck. From theſe little branches are diſtributed, which nouriſh the marrow of the Back-bone, and the neighbouring parts; they begin about the Juncture of the Head with the firſt Rack-bone, and end near to the ſeventh Rack-bone of the Neck. Theſe two *ſinus*, of which one is of the Right, the other on the Left ſide, have ſome communion betwixt themſelves by a little pipe, and that a ſhort one, which is derived overthwart from the one to the other, for the moſt part about that region of the Neck, which is betwixt the ſecond, and third Rack-bones. At laſt there is a fift vein [l] which ariſes from the hinder part, called *Muſcula inferior*, or the lower Muſcle-vein, which is diſtributed in many branches to the Muſcles in the lower part of the Neck, (and ſo extending the Head and Neck, from whence the vein might be rightlyer called *Cervicalis*, or the Neck-vein) and alſo to thoſe in the higher part of the Cheſt near to the Rack-bones.

*Mediaſtina.*

*Cervicalis.*

**Propagations that ariſe from the upper part of the Subclavian branches.**

From the upper part of the Subclavian branches, whileſt the Hollow-vein is yet in the Cheſt, three propagations iſſue forth, two of which do very well deſerve to be noted, which take their way upward, under the Muſcles that bend the Head. The former of the two looks more inwards, and is called *Jugularis interna*, the inner Jugular vein: the other inclines to the outer parts, and is commonly called *Jugularis externa*, the outer Jugular vein. For both of them ariſe near to the *Jugulum*, or Hollow of the Neck, and aſcend by that to the Head. The inner is greater, and the outer leſſe in a man; but in Brutes 'tis contrary. But when almoſt all Appellations are derived, and that beſt, not from the place, through which the veins paſſe, but from their inſertion; perhaps they might be rightlier named *Cephalicæ* or *Capitales*, Head-veins. The inner Jugular vein [m] takes its originall near to the joint, by which the Clavicles or Patel-bones are tyed to the Cheſt, and as ſoon as it ariſes, is joined with the *arteria carotis*, or ſleepy Artery, and a Nerve of the ſixt pair, as companions in its journey, at the ſide of the rough Artery, and climbing to the Chops, about the middle of the way is parted into two branches, of which one is called the outer, the other the inner branch. The outer is ſo called, becauſe it comes not into the inner parts of the Head, but being divided into two at the corner of the lower Cheek, diſtributes one branch to the Chops, and the other near to the Ears, and Face. The inner branch, all the way, is joyned to the *Arteria Carotis*, or ſleepy Artery, even to the baſis of the Skull, whither when it is arrived on the backſide, it is likewiſe cleft into two branches, but of unequall bigneſſe. For the firſt [n] is greater and more hinderly, being carried backward obliquely, which having propagated ſome twigs to the Muſcles under the Gullet, and in the forepart of the Rack-bones of the Neck, through the ſecond hole of the *occipitium* or Nowl-bone enters the Skull with the leſſer branch of the *Arteria Carotis*, through which ſaid hole the ſixt pair of the Nerves deſcends: and thus this branch enters the firſt [1] and ſecond [2] *ſinus* of the thick membrane. The ſecond branch [p] being ſmaller, and more to the forepart, quite forſaking the *Arteria Carotis*, or ſleepy Artery, goes to the forepart of the Head, and after that by the way it has beſtowed a Circle not very notable upon the Organ of hearing, it enters the Skull through the ſeventh hole of the Wedg-bone, or *Os cuneiforme*. This is diſperſed through the *baſis*, and ſides of the thick membrane, with a numerous iſſue of branches, the prints whereof are obſerved in the inner ſurface of the bones of the forepart of the Head, as we have ſaid above in the ſecond Book. Wee will call theſe two branches, becauſe they go to the brain, *Encephalici*, as if you ſhould ſay *Cerebrales*, of the Brain, and that ſhall be the greater *Encephalicus*, this the leſſer. The externall Jugular vein [q] aſcending under the skin, and the *muſculus quadratus*, or Square-Muſcle, that draws down the Cheeks, by the ſides of the Neck, when it comes to the Ear, is cleft into two branches [r] one of which I call *Profundus*, the deep one, becauſe it enters the Muſcles, and retires into

*Jugularis Interna.*

*Exterma.*

*Jugularis Externa.*

*Profundus.*

into the more inward parts, the other *Cutanes* the Skin-branch. The deep or inner one [s] in its first divarications meets with Glandules about the Chops, and sends forth propagations worthy of our notice to the *Larinx* or Throttle, and the Glandules, that grow to it, as also to the Muscles of the Chops, and of the bone called *hyodes*, among which that which creeps all along under the tongue, is a notable one, and is scattered into many little branches, which are seen, if the Tongue be lift up, even before dissection. From this deep branch three others arise, which enter into the inner parts of the Head, and the Skull. The first, after it has spread little branches into the Chops, and Mouth, enters the Skull, through the first hole of the Temple-bone. The next [e] passes out of the forepart of the eye through the second hole of the Wedg-bone, at which the second pair of Nerves gets out, and runs with some circles through the thicker Membrane upwards. The third is scattered out of the breadth of the Nostrils through the hole of the *Os cribrosum*, or sive-bone into the same Membrane. These two nourish this forepart, to which the third *sinus* reaches not, but ends near to the partition of the Mamillary Processes. But the outer or Skin branch [u] creeping by the skin of the Head, and stayed up with the Glandules under the Ear, which they call *Parotides*, is divided into two branches; of which the Anteriour [x] is carried upward obliquely through the Cheeks to the inner corner of the Eye, distributing little branches by the way to the Nose; and going on to the Eye-brow, is joyned with the remainder of the branch of the other side, and makes the Strait-vein, which they call *vena frontis*, the Forehead vein, [y] and which in madnesse is opened to very great advantage. To this the *Satyrist* alludes, when speaking of a certain foolish fellow, hee sayes,----*Mediam pertundite venam.*

Three branches entring the skull.

*Cutanea.*

The other or Posteriour branch is carried behind, and sends branches to the Temples [z] and skin of the Back-part [α] of the Head. A third vein, which arises out of the upper part of the Subclavian branches, is commonly called *Muscula superior*, the upper Muscle-vein, in relation to another of the same name arising out of the lower part. It issues out near to the externall Jugular vein, and is dispersed into the Muscles, and skin of the back-side of the Neck, in regard whereof we shal not do amisse to cal it *Cervicalis superior* or the higher Neck-vein [β]. But now let us return to the distribution of the Subclavian-vein, from which we have digrest. This vein, as soon as it gets out of the cavity of the Chest, is called *Axillaris* [F], and when it comes to the Arm-pit, is divided into two notable branches, called *Cephalica* or Head-vein [G] and *Basilica* [I], which are afterward disseminated throughout the whole Arm. But before the Axillary-vein be thus divided, it sends forth two twigs: the first [γ] is called *Scapularis interna* the inner Blade-vein, and is distributed through the Muscles on the inside of the Shoulder-blade: the other [δ] is named *Scapularis externa*, or the outer blade-vein, it is a pretty big one, and is implanted into the Muscles of the outer, and gibbous part of the same Shoulder-blade. But the vein *Basilica* also, before it enters the Arm, shoots out two propagations; one called *Thoracica superior*, or the upper Chest-vein [ε] because it arises out of a higher part then the following, it is a very notable one, and runs through the inside of the pectorall Muscle that brings the Arm forward to the Breast; it distributes branches also to the other Muscles of the Breast, as also to the Skin of the Dugs in women. The other is called *Thoracica inferior*, the lower Chest-vein [ζ], a great and notable one likewise, which descending along the side of the Chest is distributed especially through the third broad Muscle or *Latissimus* that moves the Arm backward, scattering many little branches from itself, which afterwards are joyned by *Anastomosis* or inoculation, with the branches of the vein *sine pari*, that fall out of the Chest. And this vein sometimes grows out of the former, or the upper Chest-vein. These branches being thus distributed, the Axillary-vein reaches into the Arm.

*Musculæ superior.*

The division of the Axillary vein into two branches.

Its propagations before its division.

*Scapularis interna.*

*Externa.*

*Thoracica superior.*

*Thoracica inferior.*

## CHAP. III.

*Shews how the Axillary-vein is distributed through the Arm.*

THE Axillary-vein [F] therefore is cleft into two branches, as soon as it comes near to the Arm, but those branches are of different bignesse. For the upper [G] which they call *Cephalicus*, the Head-branch, is smaller; but the lower vein [I] called *Basilica*, is almost thrice greater. The Cephalick also is as it were wholly just under the skin, & sinks not with above one branch into the deeper retreats of the Muscles; wherefore it has neither Artery, nor Nerves for its companions, they being addicted to the more inward rooms of the body. But the Basilick-vein partly creeps on under the skin, partly hides itself under the Muscles, and therefore it ought with good reason to exceed the other in bignesse, as being destined for the nourishment of more parts. It hath both Nerves, and Arteries as companions in its journey, which is the cause, why upon the cutting of this vein the bloud spins out with a force; but of the

The division of the Axillary vein.

contrary, the Cephalick being cut, it comes forth ſoftly: which we ſee ſome Phyſitians unskilfull in diſſections, ſtanding by whileſt the vein is opened, fooliſhly refer to the ſtrength, or weakneſſe of the mind, or body. We are now to ſpeak briefly of the manner of the diſtribution of both theſe veins through the Arm, beginning from the upper, as the leſſer branch.

The Cephalick vein.

The *Cephalica* [G] therefore is called by *Veſalius Humeraria*, or the vein of the Arm, becauſe by the Arm it deſcends into the Hand; by others *Cubiti exterior*, the outer vein of the cubit, from its ſituation, becauſe it runs on the outſide of the Cubit, as the *Baſilica* contrariwiſe does on the inſide. By ſome later writers it is commonly called *Cephalica*, the Head-vein, becauſe it is wont to be opened in diſeaſes of the Head, through the error of the Ancients, who thought ignorantly, that it ariſes from the external Jugular vein, and therefore empties the bloud immediately out of the Head. But it ariſes from the upper part of the Axillary vein, & climbing over the Tendon of the *Serratus minor*, or leſſer Saw-Muſcle, that bends the Shoulder-blade forward to the Breaſt, it runs betwixt the Muſcle called *Deltoides*, which lifts up the Arm, and the beginning of the Pectorall Muſcle, which brings it forward to the Breaſt, where it ariſes from the Clavicle or Coller-bone, and ſo it runs down by the Arm to the outſide of the firſt Muſcle that bends the Cubit, which they call *Biceps*, or the double-headed Muſcle; by reaſon whereof the more learned Chirurgeons have wiſely uſed to make iſſues betwixt the Muſcles *Biceps*, and *Deltoides*; for iſſues ought alwayes to be made at the ſeat of ſome notable vein, that the matter may more eaſily be voided out. But although this vein be not divided into branches, whileſt it is thus carried down by the upward part of the Arm, yet it ſcatters ſome twigs [u and e] of both ſides into the afore-said Muſcles, and the skin. At length when it is come to the Cubit, it runs under the fleſhy Membrane, as a vein under the skin ſhould, and ſo preſents itſelf to the ſight without diſſection. But about the very joint of the Cubit at the externall protuberation of the Arm, it is wont to be divided [H] for the moſt part into three branches, an outer, an inner, and a middle one. The two former run under the skin, the third deeper. The firſt or middle one, [i] which is often wanting, is very little, and deeper, and penetrates into the ſubſtance of the Muſcles, eſpecially of thoſe two, that bend the ſecond, and third joint of the fingers, as alſo of the long *Supinator* of the *Radius*, or wand of the Arm. The ſecond [x] and inner, and chief of the three branches is carried down obliquely under the skin, and joins with the inner branch of the *Baſilica*, three fingers below the joint of the Cubit, with which it makes up the vein, that Phyſitians call *Mediana*, the middle vein [λ]. This running down obliquely by the middle Region of the Cubit, diſtributes many Circles to the *Radius* or wand, and at length itſelf is divided into two leſſer branches; of which the outer [ρ] goes to the inſide of the wriſt, toward the thumb; the other and inner [σ] runs to the fore, and middle fingers. The outer of theſe is called by ſome *Cephalica manus*, and is opened to very good purpoſe in diſeaſes of the Head, or Teeth. Now the third branch [π] or outer Cephalick-vein climbs up to the Muſcle called the long *ſupinator* of the *Radius*, or wand, diſperſing divers little veins into the skin, and ſo is carried obliquely [υ] through the *Radius*, or wand, and having attained to the middle of its length enters the outſide of the Cubit, and in that ſame place is joyned with a little branch [τ] of the Baſilick-vein; being united thereto it goes on to the outſide of the wriſt; and diſtributes veins to that part of the Hand, which lies before the little, and Ring-fingers, as alſo to the fingers themſelves. This vein, eſpecially that, which reſpects the little Finger, is commonly called *Salvatella*, and the Section of it is much commended by Practitioners in Phyſick in melancholy diſeaſes. Which being ſometimes called in queſtion, and I having obſerved, that experience does favour thoſe Practitioners, endeavoured to find out the cauſe, and found that there are many inoculations here of this vein with the Arteries, as the inoculations are uſually more frequent about the extream parts, as being more removed from the fountain of heat, and therefore wanting a hotter, and more ſpirited bloud. This vein therefore being cut, becauſe the Inoculations are ſo near, it cannot be, but that the bloud of the Arteries ſhould be alſo let out, which cannot be ſo well done by opening the veins of the Cubit, becauſe the *Anaſtomoſes* or Inoculations are ſomewhat more diſtant from the place, in which the vein is opened. And hence it is, that the bloud, which is emptied out of the Hand, is much fairer and redder, then that out of the Arm, becauſe the Arterious bloud there alwayes runs out together with that of the veins. But there being ſix times more Arteries, then there are veins in the Spleen, it is neceſſary, that its diſeaſes be much helped, when the peccant bloud is drawn out of thoſe veſſels, wherein it was.

Three branches of the Cephalick-vein.

Salvatella.

The baſilick vein.

The other branch of the Axillary-vein, that is the inner, and greater, is the *Baſilica* [I] which according to its ſituation in different arms hath found different names among writers practiſed in Phyſick. For in the right arm it is called *Hepatica* or the liver-vein; but in the left *Splenica*, or the ſpleen-vein. They chooſe that to be opened in diſeaſes of the liver, this in diſeaſes of the ſpleen. But it iſſues forth under the armpit, and diſperſing many propagations to the Glandules, that are frequent thereabout, it is carried down by the upper part of the Arm to the ſide of the double headed-Muſcle, or *Biceps*, between the Muſcles

that

that bend and ſtretch out the Cubit, and not far from its egreſſe out of the Cheſt, is divided [K] into two notable branches, of which one is called *Profundus* or deep, the other *Subcutaneus*, or branch under the skin, from their ſite, and progreſſe. The deep one or *Profundus* [L], which for the moſt part is the thicker, all the way it goes, penetrates into the more inward parts of the Arm; having the Axillary Artery, that runs into the Arm, every where for its companion, as alſo the fourth branch of the third Nerve of the Arm. But it is carried betwixt the two Muſcles, which bend the Cubit, and, having paſt its joint, is cleft [M] into two branches; of which the outer [N] near to the *radius* or wand, (from whence it might be called *Raditus*) goes down to the Hand, and ſcatters little branches toward the Thumb and Fore-finger, as alſo the middle one; but the inner branch [O] paſſing near to the bone of the Cubit, (from whence it deſerves the name of *Cubitens*) diſtributes ſmall branches to the middle, and little fingers; but as the outer ſends its propagations to the Muſcles on the outſide of the Hand; ſo the inner to thoſe on the inſide. The other is the branch *Subcutaneus*, or under the skin [P] which is carried down by the inſide of the Arm, ſcattering divers little branches to the skin, and parts adjacent, but when it is come to the inner protuberation of the Arm, it is divided [Q] into an outer, and inner branch, like as the Cephalick is. The inner [R] is carried down obliquely, beneath the bought of the Arm, and being united with the inner branch [χ] of the Cephalick, makes the vein called *Mediana*, [λ] of which we ſpake before. But the outer [S] near to the inner protuberation of the Arm being divided into two branches, is carried by the greater along the Region of the *ulna* or ell downward to the wriſt, and ſcatters itſelf into the little Finger, but by the other it is derived to the inſide of the Hand.

The branches of the baſilick vein. *Profundus.*

*Subcutaneus.* Its diviſion into an outer and an inner branch.

But in this place it is worth our pains to advertiſe with other the moſt learned Anatomiſts; that it ought not to be believed, that the ſame order, and courſe of veins is to be found in all men; when the diſſection of bodies does demonſtrate, that ſcarſe two in a thouſand do accurately obſerve the ſame diſtribution of the veins. Wherefore we ought not to be ſo ſcrupulous in chooſing out places for the openings of veins, as ſome that are unexperienced, are wont; but to chooſe that vein eſpecially, which may be moſt ſafely opened, becauſe it is beſt ſeen. For ſometimes the Cephalick or Head-vein is ſo ſmall, that it can hardly be diſcerned; and ſometimes on the contrary the Baſilick is ſo. Wherefore he ſhall do beſt, who will rather follow wiſe counſell, then the ſcrupulous opinion of unskillfull men.

## CHAP. IV.

*Explains the lower, or deſcendent Trunk of the Hollow-vein.*

WE have done with the upper Trunk, and branches of the Hollow-vein, it remains now, that we treat alſo of the lower. Nevertheleſſe (as we have above alſo admoniſht) they are not indeed two Trunks, as *Galen* would have them, but one only which reaches in one continued line from its diviſion about the fifth Rack-bone of the Loins [V] as far as to the *Jugulum*, or Hollow of the Neck [D]: but, for methods ſake in teaching, we thus divide it by reaſon of the Liver, which ſtanding as it were in the middle of it, ſeems to part it into an upper, and a lower Trunk. As therefore that is the upper one [AD] which runs up from the Liver to the Hollow of the Neck; ſo that is the lower [TV] which beginning at the ſame Liver is terminated at the *Os ſacrum*, or Holy-bone. And as the upper did run on undivided through the Cheſt, ſcattering only ſome propagations at its ſides; ſo the lower alſo ſlides down intire through the whole *Abdomen*, or paunch, only ſome twigs ſprouting from it. But when it has attained to the fifth Rack-bone of the Loins, it is cleft into thoſe two notable branches called *Iliaci* [XX] as the upper is into the Subclavian, which Iliacall branches afterward reaching into the Legs make the Crurall-veins; as the ſubclavian carried into the Arms make the *Brachiales*, or Arm-veins. Let us ſpeak therefore in this Chapter of the Trunk, and its propagations, as long as it yet is in the lower belly. Then let us come to the crurall branches.

The inferiour Trunk of the Hollow-vein.

From the deſcendent Trunk then [TV] before it part into branches, ariſe four veins. For as ſoon as it is come forth from the hinder part of the Liver, it declines to the right ſide of the Back, and ſends forth a propagation from its own left ſide which they call *Adipoſa ſiniſtra*, the left fatty vein [υ on the left ſide] becauſe it paſſes to the fat and outer membrane of the Kidneys, which ariſes from the *Peritoneum* or Rim of the Belly, as alſo to the Glandule, that grows above the Kidneys. There is another [υ on the right ſide] anſwering to this on the right ſide, but which does very ſeldom grow out of the Trunk, but rather from the upper ſide of the middle part of the Emulgent vein; and becauſe it is diſtributed in the ſame manner as the left is, it is called *Adipſa dextra*, the right Fatty vein. Yet ſometimes you may ſee the contrary alſo to happen, and this right vein ſo

Four propagations ariſing from the Trunk before its diviſion. *Adipoſæ.*

come forth of the Trunk, and the left out of the Emulgent. For there are divers ſportings of nature to beſeen in the veins; and you cannot eaſily meet with a dead body, in which you may not find ſomething new, and differing from others. After this the Hollow-vein paſſing on, when it comes beyond the middle of the back, about the firſt Rackbone of the Loyns, it brings forth a ſecond pair of veins [♀] very notable, which haſtens directly to the Kidneys, upon whoſe ſubſtance it is wholly ſpent. And hence it is called *Renale*, the pair of Kidney-veins from its inſertion; but from its uſe *Emulgens*, becauſe the Kidneys ſeem by this pair to milk out the wheyie or ſerous moiſture in the bloud, and to draw it to themſelves. It is therefore very thick, but yet ſhort, and not of equall length, nor riſing directly oppoſite each to his fellow. It is ſhort, becauſe it did not need length, which for the moſt part is given by nature to veſſels for ſome previous preparation. It is unequall, becauſe it was fitting the left ſhould be longer then the right, by reaſon that it was neceſſary to bring the ſpermaticall vein out of it. But the beginning of both anſwers not directly one to another, leſt one ſhould be hindered by the action of the other. And the left is higher then the right, becauſe the left Kidney is alſo ſeated higher, then the right. But the Emulgent branches, as ſoon as they ariſe out of the Trunk, do not preſently go to the cavity of the Kidneys, but are firſt divided into two greater branches, and ſo, accompanied with Arteries, enter the concavous ſide of the Kidneys, and afterward being broken into leſſer branches are ſcattered quite through the whole ſubſtance of the Kidneys, and at laſt determin with their ſmall hairy ends in certain fleſhy proceſſes, which they cal *Mammillares*. Theſe veins do ſerve not only for the bringing of nouriſhment to the Kidneys, but alſo for the carrying down of the ſerous moiſture to thoſe fleſhy Proceſſes called *Mammillares*, through which it is ſtrained into the pipes of the Ureters, and then gathered together into that cavity of theirs called the *Pelvis*, and ſo drops down by little and little into the bladder, as we ſhall ſhew, when we open the Hiſtory of the Kidneys. And here the place is to be noted, in which the ſtones of the Kidneys are wont to be generated, which is not in the Emulgent veſſels, I mean veins, or Artery; but rather in the very cavity of the Kidneys, or in the *Pelvis*, and pipes of the Ureters. For in theſe if a viſcous matter be at any time received, either it is hardened there by reaſon of a notable heat, or elſe through cold is congealed into gravell or ſtone. For this matter is not only a crude, and uncocted kind of bloud, which like ſnivell ſometimes is wont to abound in the maſſe of bloud, but oftentimes alſo that excrementitious phlegm which falls down from the Head, through the veins and Arteries, both into the Hollow-vein, and the great Artery, and ſometimes into the Stomach, and Guts. Of which this ſeems to be a manifeſt ſign, that they who are ſubject to diſeaſes of the Stone, are very often troubled with rheumes, and pains of the Colique; of which whilſt ſome perſwade themſelves that it is cauſed by wind, dayly experience hath taught me, that it comes from phlegm; becauſe I have obſerved, that they, who are troubled with the Stone in the Kidneys, had their *Colon* or Colique-gut alwayes ſtuft with plenty of this phlegm, and that this being taken away, the Stone has been no longer bred. And therefore oft-times I give ſcouring Clyſters, and ſuch as gently purge phlegm, not only to ſuch as have the Stone already, but alſo to ſuch as are threatned with the breeding of it, with a great deal of benefit to the Patients. But all thoſe things are perpetually to be avoided, which drive out the Stones, as well becauſe moſt of that nature are hot, as alſo becauſe they are able to drive down the crude matter plentifully to the Kidneys. We thought fit therefore to inſiſt upon this, that we may accommodate the ſtudy of Anatomy to the very practiſe of Phyſick; eſpecially ſeeing that the place, wherein the Stone is bred, is not commonly known, becauſe the moſt famed *Fernelius*, whom the greateſt number of Phyſitians does for the moſt part follow, *Lib. 6. Patholog. c. 12.* thinks that ſmall gravell is bred in the proper ſubſtance of the Kidneys, and waſhed from thence by the flowing of the Urine, and carryed into the cavity, and ſo the Urine full of gravell ſlides down through the Ureters into the Bladder. But if any one enquire alſo the cauſe, why the left Kidney is more ſubject to the Stone, then the right; we muſt conclude, that this happens, becauſe the Colique-gut lies more upon the left Kidney, in whoſe cells this phlegm, of which we ſpake, abounding, either it ſweats through the pores, and is ſuckt into the Kidneys, or elſe by reaſon of its nearneſſe, the Kidneys are exceedingly cooled; experience having often taught us, that this kind of phlegmatick matter is indeed actually exceeding cold in the body, as they have ſufficiently perceived, who have voided it in great plenty by Stool. After this there follows a third pair [♂ and ♃] called *ſpermaticæ*, or *ſeminales*, the ſpermaticall, or ſeeds veins, becauſe they carry down matter for making of the ſeed. Theſe differ in their originall. For the left [♃] ariſes from the inſide, and middle part of the Emulgent, and communicating ſome ſurcles to that part of the *Peritoneum*, or rim of the belly, which covers the Muſcles, that lie in the Loins, it goes faſt by the ſaid *Peritoneum*, and deſcends obliquely; but, when it has attained to the *Oſ pubis*, or the Share-bone, riding over it, it paſſes through the *Peritoneum*, and holes of the oblique and tranſverſe Muſcles of the *Abdomen*, with whoſe proceſſes being ſuſtained it is concocted into certain varicous

*Emulgentes.*

*The place in which the ſtones of the Kidneys are bred.*

*VVhy the left Kidney is more ſubject to the ſtone, then the right.*

*Spermaticæ.*

varicous circlings, which are joined with the ſpermaticall Artery by *Anaſtomoſes* or Inoculations, and at length it ends in the Teſticle of its own ſide. But the right ſpermaticall vein [χ] ariſes not out of the Emulgent, but the Trunk itſelf, and the forepart of it, a little beneath the Emulgent-vein, and afterwards obſerves a like courſe with the former. And thus they are in males, though we may obſerve nature oftentimes varying in them: but in women, although they ariſe in the ſame manner, and obſerve the ſame courſe with thoſe in men, as far as the Holy-bone; yet they fall not out of the *Peritoneum*, nor reach unto the ſhare-bones, but before they come to the Teſticles, are cleft into two unequall branches; the leſſer of which is ſcattered into the ſides of the Womb, toward the bottom of it; the greater being joined to the ſpermaticall Artery, and inoculated with it, enters into the Teſticle of its own ſide. Laſt of all the fourth pair is called [X] *Lumbares*, the Loin-veins [4 4 4] two, or three, which the Hollow-vein ſends forth from its backſide, which looks towards the bodies of the Rack-bones of the Loins; and therefore they are not to be ſeen, unleſſe the Trunk of the Hollow-vein be lifted up. Theſe veins go in through the holes of the Rack-bones, through which the Nerves go out, and ſo carry nouriſhment to the Spinall marrow. From them two other veins, tyed on both ſides to the ſide of the Marrow, aſcend toward the brain, with which afterward two veins deſcending from the internall Jugular, are joined by an *Anaſtomoſis* or Inoculation. *Lumbares.*

Theſe propagations being thus ſent out, when the Hollow-vein has almoſt attained to the *Sacrum*, or Holy-bone, about the fifth Rack-bone of the Loins, it inclines under the great Artery, and is cut into two notable branches called *Iliaci* [XX] which having gone a little way are again cleft into two others [Y and Z] of unequall bigneſſe, of which one is called the inner, the other the outer. The inner is leſſe, the outer larger and greater. But before they be ſo divided, they ſcatter two other propagations, the firſt of which [5] is commonly called *Muſcula ſuperior*, the upper Muſcle-vein, which is diſſeminated overthwart, through the Muſcles of the Loins, and *Abdomen*, or paunch, from whence I would call it *Muſcula lumbalis*, the Muſcle-vein of the Loins: the other [6] is named *Sacra*, or the Holy-vein, becauſe it reaches ſome little twigs to the upper holes of the Holy-bone, for the nouriſhing of the ſaid bone and the Spinall-Marrow. The diviſion of the Trunk into the two Iliacall branches. *Muſcula ſuperior.* *Sacra.*

But from both the Iliacall branches many veins iſſue, before they go out of the *Peritoneum* or Rim of the Belly toward the Legs; and from the inner branch two. The firſt [7] ariſes from the outſide called *Muſcula media*, the middle Muſcle-vein; becauſe it is ſcattered into all the Muſcles of the Buttocks, and into their skin: For it carries aliment to all thoſe Muſcles, which are of the outſide, or Back of the bone *Ilium* or Hanch-bone, as alſo to the very joint of the Hip, that for this cauſe it ought to be eſpecially taken notice of by them, who would ſomewhat curiouſly conſider the cauſe of the ach in the Hip, or the *Sciatica*. I ſhould think that this vein may not be amiſſe called *Glutæa* from its inſertion, becauſe it is implanted into the Muſcles called *Glutæi*, or Muſcles of the Buttocks. The other [8] grows out of the inſide, and is a notable vein, called *Hypogaſtrica*, or the vein of the water-courſe, from its diſtribution into almoſt all the parts of the *Hypogaſtrium*, or water-courſe. From this iſſues a branch named *Hæmorrhoidalis externa*, the outer Emroid-vein, becauſe if at any time it ſwels with a more fæculent bloud, or hot, or ſalt, it makes the outward Emroids of the Fundament. This affords twigs to the holes of the *Os ſacrum*, or Holy-bone, but beſtows greater branches upon the Muſcles of the *Rectum Inteſtinum*, or the Strait-Gut, as far as to the outer skin of the Fundament. There is alſo another branch ariſing from the ſame Hypogaſtrick-vein, which we call *Cyſticus*, the Bladder-branch, and is worthy of obſervation both in men, and women; in men, becauſe it is ſpent upon the Bladder; but in women, becauſe in them being ſuſtained with a fat membrane, it goes with ſome twigs to the Bladder; but with more to the bottom of the Womb; and with more manifeſt ones to the Neck of it, by which veins alone ſome think that the monthly courſes flow in Virgins, and ſome alſo think the ſame in women. But the monthly courſes do not only flow out by theſe branches, but by thoſe alſo, which we told you were ſent from the ſpermaticall branch, and which go to the bottom of the Womb, not to the Neck. For the menſtruous bloud is uſually purged out, whether in virgins, or women, every month; not only through the Neck, but eſpecially through thoſe paſſages of the Womb, called *Cotyledones*. Which we have ſhown here at *Padua*, publiquely in the Theater, the firſt year of our being Profeſſor, in the carkaſſe of a certain woman having her monthly courſes. For we ſaw that the Hypogaſtrick branches, and the ſpermatick veſſels with the Teſticles were filled with bloud, and that the Womb itſelf did pour out a thicker bloud, the little mouths of the veins in the inner part of the Womb lying open, and manifeſtly gaping. Yet I ſaw twice in others, that the menſtruous bloud came out of the veins of the Neck only, not alſo out of the Womb, and in another on the contrary that it flowed out of the Womb only. But the ordinary way is for women to be purged at them both, and not at one only, except when beſides the intent of nature obſtructions do ſeem to hinder their flowing. Propagations of the inner Iliacall branch. *Glutæa.* *Hypogaſtrica.* *Hæmorrhoidalis externa.* *Cyſticus.*

But we have obſerved, and ſeen divers times, whileſt we were about the cure of Ulcers in the privie Members, and Neck of the Womb, that at what time the monthly courſes do flow, the mouth of the Womb gapes. I ſaw alſo then, that thoſe parts were dilated with a certain ſtinking moiſture, and that the Neck of the Womb appeared much larger, then it was wont to be at other times. And therefore no man need to wonder at that, which hath been obſerved by ſome Writers of our age, that in the time of their courſes theſe parts have been ſo widened in ſome, that being new married, although they were true Virgins, they have for this reaſon been accuſed, and thought to have been deflowred. Wherefore if it happen, that any, who are new married, doubt of their Wifes virginity, becauſe they find the privy paſſage very wide, it will behove them to conſider, whether their flowres were not at that time upon them. Now at length the remainder of the inner Iliacall Trunk makes to the Share bone, and taking to it a propagation of the outer Iliacall, together with which it makes one vein, and ſo paſſing through the *Peritoneum*, and hole of the Share-bone, it ſpreads itſelf into the Leg, and is extended almoſt beyond the middle of the Thigh on the inſide.

Propagations of the outer Iliacall branch.

*Epigaſtrica.*

From the outer branch in like manner ſome veins iſſue: and firſt of all, that which is called *Epigaſtrica*, or vein of the lower Belly [9] which ariſes from the higher part of the branch, and is ſo named, becauſe it goes to the Muſcles of the *Epigaſtrium*, to wit, the right Muſcles of the *Abdomen*. For paſſing with its chief branch out of the *Peritoneum* or Rim of the Belly, it climbs ſtraight up of both ſides under the right Muſcle, till it come near to the Navill, where it is joined by *Anaſtomoſis* with the deſcending Mammary-veins. But this *Anaſtomoſis* or Inoculation is ſeldom found in men, but in women it is very conſpicuous, from whence alſo *Galen Lib. de Diſſect. ven. & Arter. Cap.* 8. witneſſes, that that great ſympathy betwixt the Womb and the Breaſts or Dugs is cauſed by theſe two veſſels. But the moſt learned *Hippocrates* has explained this ſympathy in many Aphoriſms of the fifth Section. For in the fiftieth Aphoriſm he ſayes, If you would ſtop the courſes in a woman, apply a very great Cupping-glaſſe to her Breaſts. And in the thirty ſeventh. If the Breaſts of a great bellied woman, do of a ſodain become ſmall, the child proves Abortive. And in the thirty eight; If one of the Breaſts of a great bellyed woman become ſmall, one of the Twins, that ſhe goes with, proves Abortive; and that a Male, if the right Breaſt be ſmall; a Female, if the left: ſo the Womb being diſeaſed, the Nipples become pale; and upon a Dropſie in the Womb they ſwell up. But there is a ſympathy alſo not only by reaſon of the veins, but alſo of the Nerves, that come from the ſixth Conjugation. Whence we ſee, that if the Breaſts of a Woman, or Virgin be handled, they are provoked to luſt; ſo that for this reaſon alſo thoſe women, that have great Breaſts may be accounted more luſtfull, as *Afra* is in *Martiall*. But it is convenient to note concerning the originall of this vein, that very often it ariſes out of the Crurall branch, which we ſhall by and by deſcribe, but oftner out of the Iliacall. Another vein is the *Pudenda* [11] which ariſes from the inſide of the outer Iliacall branch, after it is come out of the *Peritoneum*, or Rim of the Belly, and it is called *Pudenda*, becauſe it is ſpent upon the privities of both Sexes. For in men it is diſtributed into the *Scrotum* or Cod, and into the skin of the Yard; but in women it is propagated to the Lips and skin of the privy paſſage, to the *Nympha* or wings, and other parts of it; but in both men and women to the Glandules, that lye about the leskes, whence ariſes that confluxe of matter into theſe Glandules, in a peſtilent or venereous *Bubo*. Laſtly, the *Muſcula inferior*, or lower Muſcle-vein [12] is that, which goes to the joint of the Hip, and is diſſeminated into the skin, and Muſcles thereabout, by reaſon whereof in my judgment by a ſtricter Appellation it might be better called *Coxendica*, or *Coxalis*, the Hip-vein.

*Pudenda.*

*Muſcula Inferior.*

## CHAP. V.

*Reckons up the propagations, and branches of the outer Iliacall branch diſſeminated through the crus, or great Foot, that reaches from the lower part of the Buttocks to the ends of the Toes.*

THe outer branch then of the Iliacall veins [Z] when it hath ſent forth the ſaid propagations, falls out of the Rim of the belly, and is carried to the *Inguina* or leskes, through the upper and inner region of the Hip-bone, through which the firſt and ſecond bending Muſcles of the Thigh do deſcend, and makes the Crurall vein [T]. The Hiſtory whereof that we may deliver in an eaſie method, we will divide it into Trunk, and Branches. But before the Trunk be cleft into its branches, it ſhoots out four propagations; the firſt of which is that they call *Saphena*, [13] and vein of the inner Ankle, becauſe it runs near thereunto; it is alſo commonly called by Phyſitians *venatali*, but improperly, as we have ſaid above in our firſt Book. But it ariſes from the inner ſide of the Trunk, preſently after its departure out of the *Peritoneum*, or rim of the Belly, and having no Artery for its companion, runs ſtraight downwards under the skin

The diviſion of the Crural vein into a Trunk and branches.

Four propagations of the Trunk before its diviſion.

*Saphena.*

skin, through the insides of the Thigh, & Leg; and when it is now come to the inner Ankle, it spreads itself into the upper part of the Foot, and scatters a branch overthwart, from which afterward many others arise, that are distributed in their order to every one of the Toes. This vein scatters other propagations by the way, but which are seldom found answerable one to another, either in number, or bigness; as we have already more then once intimated, that nature is found to sport in the veins, but especially in those of the joints. The first [17] of these propagations, not far from the originall of the vein itself, is delt into the upper skin of the inner Region of the Thigh, in two branches; of which the outer, which is the thicker, creeps through the fore, and outside of the Thigh, under the skin; but the inner goes more inwardly, and spreads itself into the rim of the Belly. The second [18] is propagated, when the vein has now attained to the middle of the Thigh. The third propagation [19] arises about the Knee, and brings forth two off-springs, one, which is disseminated into the skin of the forepart of the Knee, by the *Patella* or Whirl-bone, but the other into the skin of the Backside, where the bending, or Ham is, about which it is rowled orbicularly. The fourth [20] is carried to the middle of the *Tibia* or Leg, with surcles forward, and backward. Over against the *Saphena*, another vein [14] is brought forth from the outside of the Trunk, but shorter then the vein *Saphena* is, and reaches outward, and overthwart into the skin, that covers the forepart of the Hip-bone, as also into the Muscles of the same place, which the later Anatomists call *Ischia*. These propagations being brought forth, the Trunk afterwards is drencht into the Muscles, that compasse the bone of the Thigh, and sets out a third propagation [15] which they call *Muscula* the Muscle-vein; and there use to be two of them. For the outer, which is the lesse, sends shoots to the second, and fourth, extending Muscles of the *Tibia* or Leg, together with the skin; the inner, and greater, affords twigs to the third extender of the Leg, and to almost all the Muscles about the Thigh. After this the Trunk turning to the Backside, and descending by degrees, scatters some other twigs into the membranes of the Muscles, and by and by sends out a fourth vein, which runs into the backside of the Thigh, and is called *Poplitea*, the Ham-vein [16] much spoken of by writers of Physick, but especially by *Hippocrates* the chief of them, who 6. *Epidem.* 1. 5. commends much the opening of it in diseases in the Kidneys. But it is oftentimes seated too deep to be cut without very great difficulty. I have learnt by frequent experience, that issues made in the *Sura* or calf of the Leg, to which this vein spreads itself, have done a great deal of good in many diseases. This vein, when it is propagated, sometimes receives the addition of a Sprig from the inner branch of the Muscle-vein; oftentimes also two propagations issue from the Trunk, one higher, and another lower, which afterward are united in their journey. But presently after its rise it scatters some branches into the skin of the Thigh, about the higher and hinder part of it; then it runs down directly through the middle of the Ham, or bending of the Leg, into the Calf, to which it distributes many Surcles, that run on with an uncertain course, some directly, some overthwart, and some obliquely. These little branches being thus disseminated, the vein passes on as far as to the *Talus*, or Cockall-bone, and there at length determins.

Four propagations of the vein *Saphena*.

*Ischied.*

*Musculæ.*

*Poplitea.*

And this is the progresse of the Crurall-Trunk, and these the propagations which it scatters, before it be divided. For lying upon the bone of the Thigh, it so descends, and runs side-long near to it, that, when it has attained to the Knee, it is carried betwixt the two lowest, and hindmost heads of the Thigh, in which place [Δ] it is cleft asunder into two branches, an outer, and an inner one. But they are of unequall bigness, the outer being the smaller, and the inner the greater, but both of them [Θ Δ] are scattered through the Leg, and lowest part of the Foot. The inner [Θ] in its descent sends some propagations to the Muscles, that are placed on the backside of the Leg, and especially those which make the Calf, but most of all to the inner part [21] of the *Gasteronemius externus*, or outward Calf-Muscle, and so afterward continuing its course downward, when it is come to the lower *Appendix* of the *Tibia* or Leg, and has bestowed some shoots upon the skin, it is reflected under the inner Ankle [22] and runs out as far as to the great Toe. The outer [Δ] is presently cleft into two lesser branches, that are likewise unequall, of which the inner [Ξ] that is the greater, and lies deep, is wholly spent upon the Muscles of the Calf, running all along directly betwixt the two heads of the *Gasteronemius externus*, or first moving Muscle of the Foot, as also betwixt the *Gasteronemius internus*, or inward Calf-Muscle, and the *Tibieus anticus* or forward Leg-Muscle, and at last betwixt the Muscles, that bend the Toes, distributing some surcles every where by the way to the Muscles, through which it passes. When it comes to the mid length of the Leg, it is again subdivided into an inner, and an outer branch. The inner of these distributes a twig near to the joint of the *Tibia* or greater Leg-bone, and the bone called the Cockall, descends with the Tendons of the Muscles, and is divided into the great, the fore, and the middle Toes. The outer passes on near to the *Fibula*, or lesser bone of the Leg, and when it comes to the Ligament, which tyes together the greater and lesser bones of the Leg, it shoots forth a branch, which perforating the Ligament runs into the Foot, and is scattered into the Muscles; which bend the Toes of the Foot outward.

The division of the Trunk into two branches.

But

But the outer and leſſe branch [Π] of the Crurall-vein goes from that diviſion of the outer branch, which is made near the Ham, to the upper *Appendix* of the *Fibula*, as alſo to the outer, and hinder part of the *Tibia*, where ſcattering many little branches, it goes to the outer Ankle, and at laſt ends in the Foot.

And this is the univerſall Hiſtory of the Hollow and Gate-veins, wherein we have perfected the whole courſe of their diſtributions. It ſeems yet to remain, that we ſpeak of the Umbilicall, and Arterious veins. But becauſe the Umbilicall vein is nothing elſe but a more notable propagation iſſuing out of the Gate-vein; and in a man grown performs the office of a Ligament, rather then a vein; becauſe it keeps the Liver in its place; as the ſtories of them do witneſſe, who upon the cutting off, or wounding of the Navill, have ſodainly dyed, their reſpiration being hindred by the weight of the Liver falling out of its place, and putting down the *Diaphragma* or Midriſſe with it; we thought it not worth our pains to make any more mention of it in this place. But if any one will obſtinately contend that it is a peculiar vein with arguments fetcht out of his own Brain, we know no better counſell, that we can give him, then to conſult better with his own ſenſe, or if he will contend further, to purge his Head with Hellebore, that that dimneſſe of his Eye-ſight may be a little taken away. But we ſhall with more convenience make mention of the *Vena Arterioſa*, or Arteriall-vein, in the following Book, when we ſhall explain the Hiſtory of the *Arteria venoſa*, or venall Artery, becauſe they are very like one another, and therefore the ſame pains may ſerve them both.

# An Explanation of the Table of the Veins.

This Table delineates the Hollow-vein, entire, and free from all parts. Wherein we have marked the Trunks, and larger branches, with pretty great letters: but the propagations with little ones; and when they are at an end, with figures.

AD. THE Ascendent Trunk *of the Hollow vein, the beginning whereof is about* A, *which notes the place, wherein the Liver should stand in the proportion of this figure, the end about* D. *For it passes on undivided from the convex part of the*

a a a. *Liver, about which it scatters little branches,* a a a. *as far as to the Hollow of the Neck; but it scatters some propagations, three in number.* The first *of these,*

æ æ. æ æ, *is called* vena Phrenica *the vein of the Midriffe, which is distributed of both sides into the midrieffe and* Pericardium, *or purse of the Heart growing thereto, as also into the* Mediastinum *or partition of the Chest.*

Another *is* Vena Coronaria *the Crown-vein,*

b b. bb, *which embraces the* basis *of the heart in manner of a Crown, dispersing many Surcles to the point of it.* The third *is the vein* Azygos, *or without a mate,*

c c. c c, *which issuing out from the right side of the Hollow-vein, about the heart, about the fifth Rack-bone of the Chest, goes down near to the right side of the Rack-bones, as far as to the second almost of the loines.*

ddd. *There are ten propagations* d d d *from this, sent to as many bony distances of the ribs, which are called* Intercostales inferiores, *the lower veins betwixt the ribs.*

B. *Shews how the Trunk* A D *is bowed toward the right side, because of the situation of the heart.*

C. *The orifice of the Hollow-vein reaching into the right ventricle of the heart.*

D. *The division of the Ascendent Trunk about the Hol-*

E E. *low of the Neck, into two branches* E E. *which they call* subclaviæ, *or the veins under the Collar-bones. From these arise many propagations, some issuing from the lower, others from the upper part of them.*

Out of the lower part *issue five.* The first *is called* Intercostalis superior *the upper vein beeween*

e. *the ribs,* e, *and scatters two Surcles* f f, *to the dis-*

f f. *tances of the three upper ribs:* The second *is* mammaria *the vein of the dugs,* g, *which, descending under*

g. *the breast-bone, as far as to the strait Muscles of the* Abdomen, *is inoculated* 10, *with the Epigastrick-vein climbing upward,* 9, *giving surcles to the Gristly distances of the true ribs, as also to the* Mediastinum, *and Muscles, that lie upon the breast.* The third *called*

h. Mediastina, h, *is disseminated into the* Mediastinum, *or partition of the Chest.* The fourth, ver-

i. tebralis, *or the vein of the Rack-bones,* i. *climbs up through the holes, that are bored in the transverse processes of the Rack-bones of the Neck, distributing sprigs to the Muscles, that lie upon the Rack-bones.* The fifth *is called* Cervicalis *or the vein of the bin-*

l. *der part of the Neck,* l, *distributed into the Muscles, seated on the lower part of the back side of the neck, and on the upper part of the Chest.* Out of the upper part *issue three.* The first *is* Jugularis interna, *the inner*

m. *vein of the Hollow of the Neck,* m, *which having sent over small sprigs from its outer branch to the Chops,*

n. *and region of the Ear, is joined by the inner all the way to the* Arteria carotis, *or sleepy Artery, and is divided near to the skull into two branches called* Encephalici *or of the Brain, by* Spigelius; *of which the*

o o. hindmost and greater, n, *having entred into the skull through the second hole of the Nowl bone, is in-*

p. *serted* o o, *into the first* 1, *and second* 2 *sinus of the thick membrane. But* the foremost and lesser, p, *having entred through the seventh hole of the wedg-bone, is scattered through the sides of the thick membrane.* The se-

q. cond *is the outer Jugular vein,* q, *which getting up by*

r. *the sides of the Neck, is divided near to the Ears,* r, *into two branches; of which* the one *called* Profun-

f. dus, f, *is variously disseminated into the Muscles of the* Larinx *or Throttle, and the bone called hyoides, as also into the Tongue, the Palat, and hollowness of the Nostrils, and lastly into the skull with three propagati-*

t. *ons, of which that which passes* t *out of the forepart of the eye, through the second hole of the wedg-bone, is very well delineated here.* The other *called* Subcutaneus,

u. u, *first of all spreads its fore-branch* x, *into the Mus-*

x. *cles and skin of the Face, which joins with its fellow a-*

y. *bout the top of the nose, and makes the Forehead vein* y; *then it issues out another hinder branch, which partly, creeps upward along the temples,* z, *and partly is carryed behind the ears to the skin of the back part of the head.*

α. β. α The third, Cervicalis Superior, *the upper vein of the Neck,* β *is propagated into the Muscles behind on the back side of the Neck. There are three* sinus *or small channels of the thick membrane of the brain, the*

1. *first or right one is marked with* 1, *the second or left*

2. *one with* 2, *the third with* 3. *The hinder part of this,*

3. *which is nearer to the Nowl of the Head, is shadowed; but the forepart, which is next the Forehead, is seen manifestly. From this sinus many little veins, which they call* Ductus, *are reacht forth to both sides.*

F. *Here the subclavian vein takes on it the name of* Axillaris *or the vein of the Armpit, and is divided into two branches, the Cephalick* G, *and the Basilick* I. *But before this division it scatters two twigs:* the first *called* scapularis interna, *or the inner*

γ. *vein of the shoulder blade,* γ, *the other* Scapularis

δ. externa, *the outer blade vein* δ. *The Basilick vein also,* I, *before it enters the Arm, propagates two;*

ε. one *called* Thoracica superior, *the upper Chest-vein,* ε, *which is distributed through the inside of the Pictorall Muscle, and in women, through the Dugs:* the other *called* Thoracica inferior, *the lower*

ζ. *Chest-vein,* ζ, *which descending along the side of the Chest, goes to the Muscle called* Anisealptor.

G. The Cephalick vein, *which, before its division,*

η. *sends away a sprig,* η, *into the Muscle* deltoides, *and another* θ *into the Muscles of the Cubit.*

*When the Cephalick vein comes to the joint of the Cubit, at the outer bunching forth of the Arm it is cut*

H. *into three branches,* H. The first, ι, *or deep and middle*

ι. *one goes to the Muscles arising from the said protube-*

κ. *ration.* The second κ, *or inner goes to the making*

λ. *of the vein called* Mediana λ. The third μ, *or outer*

μ. *is carried obliquely,* ν, *by the* radius *or lesser bone of the*

ν. *Cubit, to the outside of the Arm, and so creeping on obliquely all the way, when it is come to the root of the wrist, it is joined with a little branch of the Ba-*

*ſilick-vein,* τ, *and makes the vein called Salvatella.*

The Baſilick-vein, *which on the right hand is called* Hepatica, *or of the Liver, on the left* Lienaris, *of the Spleen. This before its diviſion ſends out a Surcle,* ο, *to the heads of the Muſcles of the Cubit; and then another notable one* π, *which being carried down obliquely, beſtows its Surcles upon the Muſcles, that ariſe from the outer protuberation of the Arm.*

*The diviſion of the Baſilick-vein* K *into two branches,* the one *called* Profundus *or the deep one,* the other Subcutaneus, *or branch under the skin.* The deep one L, *when it comes to the bending of the cubit, is divided into two,* M, *one of which called* Radius N, *at the* Radius, *or leſſer bone of the Cubit; the other called* cubitcus, O, *at the greater bone of the Cubit, goes to the hand.*

Subcutaneus, *or the branch next under the skin* P, *near to the inner protuberation of the Arm is divided,* Q, *into two other, of which* the inner R *together with the inner branch of the Cephalick* κ, *makes up the vein* mediana λ, *which is likewiſe divided into two branches, the outer of which,* ρ, *is called by ſome* Cephalica manus, *and goes to the Thumb; the inner* σ *to the fore and middle fingers:* The outer S *going to the wriſt, is joined toward the little finger with the outer branch of the Cephalick-vein about* τ.

*The little valves, which are found in the veins of the joints, are handſomely cut out here, as it were to be ſeen through.*

The Deſcendent Trunk *of the Hollow-vein which begins about the region of the Liver* T, *and ends about the fifth Rack-bone of the loins* V. *There are four Twigs growing from this.* The firſt υ *called* Adipoſa *or Fattie-vein, diſtributed to the Membrane of the Kidneys.* The ſecond φ *the Emulgent going to the Kidney.* The third, præparans vas, *the preparing veſſell; the right one* χ *ariſing out of the Trunk* T.V. *the left* ϕ *out of the left Emulgent, both afterward going into the Teſticles* ω. The fourth *is the three* Lumbares *or loin-veins* 444.

*The diviſion of the Deſcendent Trunk* V, *into the two Iliacall branches* XX, *both which are again divided into two other, an inner one* Y, *and an outer* Z. *But before this diviſion two propagations are iſſued forth,* Muſcula lumbalis, *or the Muſcle-vein of the loins* 5, *and* Sacra *or the holy-vein* 6.

Y. The inner Iliacall vein, *before it goes out of the* Peritoneum, *or rim of the belly, ſhoots out two propagations, the firſt called* Glutæa 7, *and the ſecond* Hypogaſtrica 8. *The remainder of it paſſing through the* Peritoneum, *is ſpent upon the inſide of the Thigh.*

Z. The outer Iliacall vein *likewiſe before its going forth of the* Peritoneum *ſcatters three propagations;* the firſt *called* Epigaſtrica 9, *going into the Muſcles of the* Epigaſtrium, *and the ſtrait ones of the Abdomen, where they are joined by* Anaſtomoſis, *or inoculation* 10. The ſecond *called* Pudenda, 11, *ſpent upon the privy parts.* The third Coxalis, 12, *upon the Muſcles of the Hip.*

*Here the outer Iliacall vein having paſt through the* Peritoneum *or rim of the Belly enters the* Crus, *and begins to be called* the Crurall Trunk Γ, *that is undivided as far as to the two lower heads of the Thigh. But it reaches forth four propagations before its diviſion.* The firſt; 13, *is called* Saphena, *which creeps through the inſide of the Leg, under the skin as far as to the ends of the Toes.* Another 14 *called* Iſchia *is ſpread out into the skin upon the Hip-bone.* The third 15 *named* Muſcula *is ſent to the Muſcles, which extend the Leg.* The fourth 16 *named* Poplitea *is diſtributed into the Calf of the Leg.*

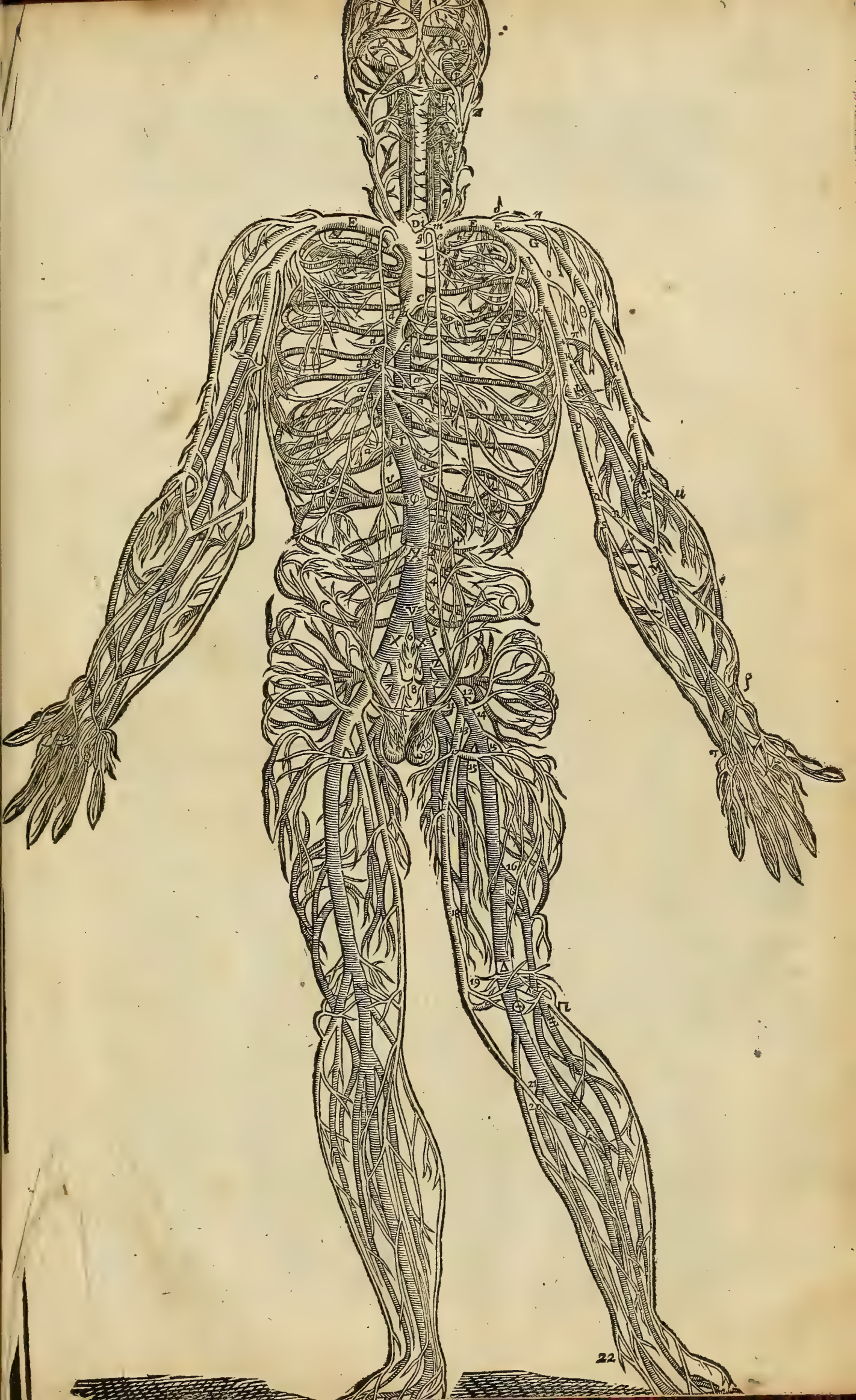
*The vein* Saphena *alſo ſcatters from itſelf four ſurcles,* the firſt 17 *into the upper part of the skin of the inſide of the Thigh:* the ſecond 18 *about the middle of the Thigh:* the third 19 *into the Knee:* the fourth 20 *is carried forward and backward to the middle of the Leg.*

*The diviſion of the Crurall Trunk near to the two lower heads of the Thigh into an inner branch* Θ, *and an outer one* Λ.

*The inner diſtributes little branches to the Muſcles of the Calf* 21, *and then runs down under the inner ankle to the great Toe* 22.

*The outer preſently is cleft into two branches, an inner one* Ξ, *and an outer* Π. *That is ſpent wholly upon the Muſcles of the Calf: this paſſes on near to the* Fibula *or leſſer bone of the Leg, through the outer and back-ſide of the Leg.*

THE



# The ſecond Treatiſe,

## Concerning

# The ARTERIES.

### CHAP. I.

*Shews the upper or aſcendent Trunk of the great Artery, with its propagations that are diſtributed through the Head.*

THere is no controverſie among writers of Anatomy concerning the number and originall of the Arteries, but an unanimous conſent, that all the propagations, which are ſcattered throughout the body, take their riſe from one, which they call *Aorta*, and that this is derived out of the Heart. But the Heart conſiſting of two *ſinus* or cavities, a right, and a left one; this great Artery grows out of the left *ſinus* or ventricle [A], where it is largeſt, and more hard, and griſtly, then elſewhere. But as ſoon as it is grown out, and before it fall out of the *Pericardium* or purſe of the Heart, it preſently propagates two ſmall ſprigs [a a] one of each ſide, which they call *Arteriæ Coronariæ*, the Crown-Arteries, becauſe together with the *vena Coronalis*, or Crown-vein, they compaſſe the *baſis* of the Heart in manner of a Crown, and from theſe many propagations are ſcattered downward all along the Heart. But they are more, and greater about the left, then the right ventricle, as we have alſo formerly ſaid concerning the vein, becauſe the Heart needs a greater plenty of bloud on that ſide, as which beats with a perpetuall, and more violent motion, wherein more bloud is digeſted, then the right *ſinus* or ventricle does: yet that propagation is bigger, and longer, which ariſes out of the right ſide of the Artery: ſometimes alſo there is only one, at whoſe orifice a little valve is found. Theſe propagations being thus diſſeminated, the Artery aſcends ſomewhat, under the Trunk of the *vena Arterioſa*, or Arteriall-vein, and pierces through the *Pericardium*, and, having got above it, is cleft [B] into two branches, which becauſe of their notable greatneſſe we will call Trunks, and becauſe one aſcends [C] and the other runs downward [Q] that ſhall be the Aſcendent Trunk, this the Deſcendent. Yet the Deſcendent, and lower one is bigger by much then the upper, becauſe that ſerves more parts, then this. For the Aſcendent one goes only to ſome parts of the Cheſt, to the Head, and Arms; but the lower to very many parts of the Cheſt, to all the loweſt Belly, and the Legs. That therefore we may treat of the great Artery with more perſpicuity, we will firſt ſhew the Aſcendent Trunk, and its progreſſe through the Cheſt, and Head, and after that its branches diſtributed through the Arms. Then we will fall upon the Deſcendent one, and explain the manner of its diſtribution through the Cheſt, and loweſt belly, and laſtly through the Legs.

The originall of the great Artery.

*Arteriæ Coronariæ* the Crown-Arteries.

The diviſions of the great *Artery* into two Trunks.

VVhat parts both the Trunks nouriſh.

The order of that which is to be ſaid.

The Aſcendent therefore or upper Trunk of the *Aorta* [C], being faſtened to the *Oeſophagus*, or Gullet, climbs upward betwixt the rough Artery, and Hollow-vein, and the *mediaſtinum*, or partition of the Cheſt. Which ſituation of it they ought diligently to obſerve, who deſire to know the reaſon of that Aphoriſm, which is the four and twentieth of the fifth Section in *Hippocrates*: For, ſayes he, cold things, as ſnow, and ice, are enemies to the Breaſt, provoke coughs, and cauſe eruptions of bloud, and diſtillations. Truly they are enemies to the Breaſt, becauſe, whileſt they are ſwallowed down through the Gullet, they cool the rough Artery, that lies next to it, together with the Gullet, which part being of it ſelf cold does eaſily take harm from ſo violent a cold: hence the cough, and other diſeaſes of the Breaſt follow one another in a long row. But iſſues of bloud happen in like manner, the great Artery being cooled, whereby the vitall Spirits, and the bloud are driven back to the Heart, and from thence are ſent up forcibly to the Head, which being ſtuft, eruptions of bloud are cauſed by its dropping forth at the Noſtrils, as

alſo

alſo catarrhs and diſtillations, it being driven down undigeſted to the inferiour parts. And hence alſo a reaſon may be rendred, why ſome, upon drinking of cold water after vehement motions, and exerciſe of the body, have preſently been ſuffocated, the paſſion of the heart, and grievous ſwoundings following thereupon. For the Artery being vehemently cool'd, the blood is congealed, as well that, which was in the *Aorta*, or Great artery, as that which abides in the heart; from whence happen at firſt fearfull ſymptoms, and then ſuddain death. But we have ſeen in theſe men, that a vein being opened, the bloud hath come out thick, and cold, and with very great difficulty, whence alſo we have not found a more preſent remedy for them, then ſuch things, as by reaſon of the thinneſs of their parts have a power of diſſolving the clots of blood. Hence alſo a reaſon may be given, why in burning feavers the tongue becomes black, and the diſeaſed can hardly ſwallow. For although it be true (which is the cauſe commonly aſſign'd) that many vapors are ſent up from the whole body to the head; yet we may aſcribe a main cauſe of this blackneſſe to the nearneſſe of the artery, which being ſet on fire, and inflamed, procures much miſchief to the gullet, and conſequently to the tongue it ſelf.

The diviſion of the Aſcendent trunk into two branches.

The ſubclavian arteries.

But the Aſcendent Trunk, whilſt it paſſes thus upwards, is divided into the two ſubclavian arteries, [DD] of which one runs to the right ſide, and the other to the left. They are called *ſubclaviæ*, as long as they are in the cheſt, for the ſame reaſon as the ſubclavian veins are ſo called, becauſe they run under the *claviculæ* or collar-bones: but as ſoon as ever they are faln out of the cheſt, they change their name, and are called *Axillares* [E]. From both the ſubclavian arteries, when they have attained to the firſt rib (for before that they ſend forth no propagations) many ſprigs iſſue out, as well from their upper, as lower part. From the lower iſſues the upper Intercoſtall artery, or *Intercoſtalis ſuperior* [b], which being faſtned to the roots of the ribs, beſtowes particular branches upon the diſtances of the four uppermoſt which run under the ribs, together with the veins, as far as to the griſtles, from which propagations are diſperſed into the marrow of the back, and the neighbouring muſcles. From the upper part iſſues firſt that which is commonly called *Cervicalis*, or the artery of the neck [c], but better *vertebralis*, of the rack-bones, which ariſes more backward, and toward the bodies of the rack-bones, and aſcending obliquely, near to the ſeventh rack-bone of the neck, like the neck-vein, paſſes through the holes of the tranſverſe proceſſes, and upper rack-bones of the neck, where it ſhoots out many propagations, which enter the ſpinall marrow through the common holes, at which the nerves go out. It ſends alſo a pretty company to the muſcles that are ſeated on the backſide of the neck, and aſcends to the nowle-bone together with the vein, through whoſe firſt notable hole, by which the ſpinall marrow deſcends out of the head, it enters the skull. After this it is joined with its fellow of the other ſide under the ſpinall marrow, which remains yet in the skull, and ſo runs ſtraight forwards, under the middle of the *baſis* of the brain; but when it hath now attain'd to the *ſella*, or ſaddle of the wedg-bone, upon which the phlegmatick glandule lies, it is divided into two branches, a right, and a left one, both which at the ſide of the ſaddle creep to the ſecond pair of the nerves, where being broken on both ſides into an infinite number of ſurcles, they are diſperſed betwixt the firſt and ſecond pair of the nerves, and folded together with the thin membrane make that complication of veſſels call'd *plexus Choroides*. The next is *arteria mammaria* or artery of the paps [d] which being reflected under the breſt-bone (accompanied with the mammary vein) deſcends along its ſides, and when it comes to the griſtle called *Enſi-formis*, or the breaſt-blade, about the ſides thereof goes out of the cheſt, and running under the right muſcles of the *abdomen*, deſcends directly through the lower ſide of them, and at length neer the navell, is joined by *anaſtomoſis* or inoculation [x] with the Epigaſtrick artery plying upward [i]. But before it leaves the cheſt, it ſcatters particular branches to the ſix diſtances betwixt the griſtles of the ſeven true ribs, which branches determin together with the griſtles. A third [e] is otherwiſe called *Muſcula* the muſcle artery, but might bee better, and more ſtrictly named *Cervicalis*, being it is diſſeminated into the muſcles, that are placed in the region of the neck, as far as to the *occipitium* or nowl of the head.

*Intercoſtalis ſuperior*, the upper artery between the ribs.

*Vertebralis*, the artery of the rack-bones.

*Mammaria*, the artery of the paps.

*Cervicalis*, the artery of the neck.

*Arteria axillaris.*

Its branches before it enters into the arm.

From its lower part.

From its upper part one.

Theſe branches being ſent out, the ſubclavian artery goes out of the cavity of the cheſt, and getting above the firſt ribs tends obliquely to the arm-pit, and ſo makes the axillary artery [E] which afterward is ſpread into the arm. But before that it ſcatters ſome propagations, and *from its lower part* three, of which the firſt is *ſcapularis interna*, the inner-blade artery [f] which goes to the muſcles on the hollow ſide of the ſhoulder-blade. Another is *Thoracica ſuperior* the upper cheſt artery [g], which goes to the pectorall muſcle, that leads the ſhoulder forward to the breaſt, and the other muſcles that lie upon the breaſt, and is a pretty big one. The third is *Thoracica inferior* the lower artery of the cheſt, [h] which is alſo a large one, and running down all along the ſide of the cheſt, is the greateſt part of it ſcattered into the broad muſcle called *Latiſſimus*, which moves the ſhoulder backward from the breaſt. *From the upper part* of the axillary artery ariſes one called *ſcapularis externa* the outer blade-artery [i], which climbing up to the top of the ſhoulder is diſſeminated into the muſcles that cover the gibbous ſide of the ſhoulder-blade,

blade. The remaining part of the axillary artery passes on in company of the Basilick vein to the arm, upon all which it is afterward spent, of whose distribution we will speak in the following Chapter.

That which remains yet of the Ascendent Trunk [L] being sustained with the *Thymus* neer to the upper part of the breast-bone, is divided into two branches [MM] which they call *Carotides*, or *soporales* the sleepy arteries, because they being obstructed, or any way stopt, we presently fall asleep, of which *Valuerda* witnesses in *Anatom. lib. 6. c. 11.* that *Realdus Columbus* made tryall in a young man, among a great company of men. They are unequall in bigness, the right one being much thicker then the left, but they tend directly upward, being carried along by the sides of the neck, and fastned to the rough artery, and to the internall jugular veins, by the benefit of a membrane, and when they are come to the cups, are divided into two branches [N] of which one is the outer, the other the inner one: that is the lesse, this is the greater. *The outer* [O] sends propagations [+] to the cheeks and muscles of the face; then when it is come to the ear, it is divided in twain; for *one branch* [r] of it goes to the backside of the ear, from which two branches under the ear enter the neather jaw through the first hole of it, that is seated at its processes, and throughout the length thereof are disseminated into the roots of all the lower teeth; that which remains, going out at the second hole; which is placed at the chin, is scattered into the lip. The *other branch* [q] creeps through the Temples and fore-head, and is spent upon the muscles of the face. The *inner branch* [P] of the sleepy artery, or *arteria Encephalica* the brain-artery, is carried into the chops; and having scattered some propagations to the tongue and throttle, is divided about the *basis* of the skull, into two unequall branches, to wit, a greater, and a lesser one. The *lesser and hindmost* [s] is carried together with the greater Encephalick branch of the internall jugular vein to the back-side of the skull, enters through the second hole of the *occipitium* or nowl-bone, and goes into the *sinus* or canale of the thick membrane. The *greater and more forward* [t] having entred the cavity of the skull through a hole made on purpose for it in the temple-bone, and attain'd to the saddle of the wedg-bone, going every where under the hard membrane; first of all propagates a branch on both sides into the side of the thick membrane, then in beasts scattering an infinite number of surcles makes the *Rete mirabile* or wonderfull net, which indeed may be found in a man too, but it is very little, and seems but a shadow in respect of that in beasts. These surcles being thus placed it pierces through the thick membrane of the brain, and having got out of it, sends another propagation out of the skull, through the second hole of the wedg-bone to the eye, and its muscles, as also to the temple muscle, that lifts up the lower jaw; and then going straight up to the side of the phlegmatick glandule, it is divided into two branches, an outer, and an inner. The inner is joined with its fellow of the other side, and being joined they are wasted into many little arteries, which are dispersed through the thin membrane, and the very substance of the brain, to the originall of the optick nerves. The outer being reflected and sustained with the thin membrane, goes into the forward ventricle of the brain; being divided into many surcles, which are united with those little arteries, which arise from the *vertebralis*, or artery of the rack-bones; some with those which the vertebrall artery scatters through the *basis* of the head under the brain, but others with those which it disseminates through the thin membrane and substance of the brain, together with which they make the *plexus choroides*.

The sleepy arteries.

The division of them.

The outer, or branch of the face,

The inner, or branch of the brain.

The division thereof into a lesser and greater branch;

A subdivision of the greater.

## CHAP. II.

### *Declares the History of the Axillary artery being distributed through the Arm.*

THE Axillary artery therefore when it is come to the arm, taking the name of the Arm-trunk [FF] is carried in one undivided stock, beyond the bent of the cubit, through the inside of the arm, dispersing some small propagations on both sides to the muscles that lie on the inside of the upper part of the arm. But it goes fast by the inner or deep branch of the Basilick vein, as an unseparable companion of it, whose conduct and steps it every where follows. But presently falling down by the back-side of the upper part of the arme, where the muscles which extend the cubit stick to it, it sends forth two propagations [l & m] the lower of which is a very notable one, and so it is writhed back toward the bent of the cubit, and having attained thereunto it reaches out two surcles [n n] one of each side, so manifest, that the pulse is there oftentimes evidently enough perceived. Then going under the bent of the cubit, through the inside of it, and sinking down betwixt the two muscles that bend the second and third bones of the four fingers, it is cut [G] into two notable branches, one of which is an outer, the other an inner one. The outer [H] is carried along

*Brachialis truncus*, the trunk of the arm.

The division thereof into two branches.

The outer branch,

along the *Radius*, or leſſer bone of the cubit ( whence I call it *Radieus* ) and goes directly to the wriſt, in which place Phyſitians feel the pulſe, it being very manifeſt, by reaſon that the artery lies next under the skin. But not far from the root of the wriſt it ſhoots out a little branch [ o ] which runs under the tendons of the muſcles, which extend the thumb, into the outſide of the hand, and is ſpent upon the muſcles, which are placed betwixt the firſt bone of the thumb, and that of the after-wriſt, which ſupports the fore-finger. This branch being propagated, going under the inner annular ligament of the wriſt, and the broad tendon of the palm-muſcle, it is divided into three branches [ ppp ] like the vein, and nerve, that are its companions. The firſt of theſe goes to the inſide of the thumb, the ſecond to the inſide of the fore-finger, and the third to that of the middle. The firſt, and ſecond are each of them parted into two branches; the third is undivided.

The inner branch.

*The inner branch* of the trunk of the arm [ I ] runs ſtraight along the *ulna* or greater bone of the cubit ( and for that reaſon I call it *Cubiteus* ) and is diſperſed into the palm of the hand. But it is ſo hidden among the muſcles, that it is hardly perceived to beat, unleſſe in lean folkes; and therefore Phyſitians alwaies lay their hands upon the outer branch, when they feel the pulſe in the wriſt. But it paſſes on under the tranſverſe ligament of the wriſt, and the tendon of the palm-muſcle, in company of a vein, and nerve, and ſcatters two branches into the little finger, as many into the ring-finger, and one into the outſide of the middle.

## CHAP. III.

### *Shews the Inferiour or Deſcendent Trunk of the great artery, and the propagation thereof through the middle and loweſt bellies.*

WEE have ſaid above, that the great artery [ A ] as ſoon as it has gotten above the *Pericardium* or purſe of the heart, is divided [ B ] into two branches; of which one goes upward, the other deſcends to the parts below. We have already handled the upper branch; it remains that wee explain the other alſo.

The Deſcendent trunk.

Its progreſſe.

The Deſcendent trunk therefore [ Q ] anſwering in proportion to the ſtock of a tree, is carried down to the fifth rack-bone of the cheſt, and declining ſomewhat to the left, cleaves to that ſide of the body of the rack-bones, and ſo deſcends leiſurely. When it has now paſt the midriffe through that diviſion reſembling a ſemi-circle, which is betwixt the productions of the *ſeptum tranſverſum* or midriffe, preſently it runs out by the rack-bones of the loins, leaning upon the middle of their body, til it come to the laſt of them, where near to the *os ſacrum* it is divided [ R ] into two notable branches [ SS ] which with other Anatomiſts we wil cal *Iliaci* the Iliacal arteries from their ſituation. In this journey it ſcatters many propagations from it ſelf, which are very worthy to be diligently obſerved, becauſe from thence we may eaſily give a reaſon of many accidents in diſeaſes. But they are in number eight, the Intercoſtal arteries, the two *Phrenicæ* or arteries of the midriffe, the Cœliacall one, then the upper Meſenterick, the two Emulgents, as many ſpermaticall ones, at laſt the lower Meſenterick, and the *Lumbares*, or arteries of the loins. Of theſe the Intercoſtalls are ſcattered, whilſt the trunk is yet in the cheſt; the reſt, whilſt it paſſes on through the loweſt belly. But ſome of them accompany the branches of the gate-vein, as the Cœliacall, and both the Meſentericall arteries; others thoſe of the hollow vein, as the reſt. Now we will treat of theſe in order, beginning from the Intercoſtalls, or arteries between the ribs, which are placed uppermoſt. Preſently therefore after the Deſcendent trunk [ Q ] is iſſued forth, from its back-ſide it ſends over little branches on both ſides to the diſtances of the eight lower ribs, which they call *Intercoſtales inferiores*, the lower arteries between the ribs [ uuu ] in reſpect of the upper Intercoſtall, of which we have ſpoke above. Theſe aſſociating themſelves with the veins and nerves of the ſame name, go ſtraight on by the lower ſide of the ribs; where peculiar *ſinus* or channells are cut out for them. But as the Intercoſtall veins reach in the true ribs only to the griſtles, but in the baſtard ones ſomewhat farther, to wit, to the ſides of the *abdomen*: ſo alſo the arteries end in them together with the bony part of the ribs, but in theſe run out a little farther. And theſe arteries ſend over ſome propagations through the holes of the nerves to the ſpinall marrow, and to the muſcles that lie upon the rack-bones of the back, juſt as we have ſaid the Intercoſtall veins were propagated. But the uſe of them is to diffuſe the vitall ſpirit, and the blood to the muſcles betwixt the ribs, beſides which they have alſo another notable office, to wit, of carrying down the water, and purulent matter, that is gathered together in the cheſt, into the great artery, and from thence by the Emulgent branches to the bladder. Although I am not ignorant that the moſt learned *Fallopius*, and others who have read before me in this moſt famous Univerſity of *Padua*, have ſhewn another way to their Auditors; by which either purulent matter, or water might be conveighed forth by help of the kidneys, to wit, the vein *ſine pari*, or without a companion, a little branch whereof in the

Its propagations.

*Intercoſtales inferiores*, the arteries between the lower ribs.

Their uſe.

left

eft ſide goes into the Emulgent of the left kidney. But this way which we ſhew through the Intercoſtall arteries, is by much the ſhorter; that I paſs by this, that any matter heaped together may be more eaſily diſpatcht away through the arteries then the veins. Nor needs any one here to be afraid, leſt the vital ſpirits ſhould be infected from theſe excrementitious and ill humors, whereby the heart may incurre fearfull ſymptomes; when we willingly grant (which experience alſo hath often taught us) that whilſt the corrupt matter is emptied out by the urine, the ſick parties have often falo into fits of ſwounding, and other diſeaſes; ſometimes alſo have died ſuddenly, when the peccant humor has been of too great a quantity, or too bad a quality, and has offered ſo much violence to nature, that the heat, and ſpirits have been overcome therewith. But here a certain place in *Hippocrates* calls upon me to explain it, which has long and often troubled my mind. The place is in *Coacis prænotionibus*, where he ſays; They, who together with the heart have their whole lungs inflamed, ſo that it falls to the ſide, are deprived of motion all over; and the parties ſo diſeaſed lie cold, ſenſeleſſe, and die the ſecond or third day. But if this happen to the lungs without the heart, they live not ſo long. Yet ſome alſo are preſerved. I have often thought with my ſelf, what ſhould be that ſympathy of the heart and lungs with the brain and nerves, that from the inflammation of thoſe parts, the Patient ſhould be ſo deprived of ſenſe and motion all over, when the ſame *Hippocrates* teacheth in the ſame place, that the diſeaſed ſuffer ſuch deprivation in that part, & livid ſpots appear on the outſide about the rib, where-about the *Aortæ* (ſo he ſeems to call the lobes or diviſions of the lungs) being inflamed fall to the ſide. But if they be not much inflamed, ſo that they fall not down to the ſide; he ſayes that there is a pain indeed all over, but no deprivation of ſenſe or motion, nor any ſpots appear. Having deliberated often with my ſelf, at length I came to be of this opinion; that there was no other cauſe, but the ſympathy betwixt theſe Intercoſtal arteries, and the marrow in the back-bone. This ſympathy ariſes from thoſe propagations, which we told you paſt through the holes of the rack-bones of the cheſt into the backbone. Wherefore if the lungs, and heart be ſo mightily inflamed, that great plenty of bloud ruſh into the great artery, whereupon it ſwells, as alſo theſe veſſels betwixt the ribs, and conſequently thoſe ſurcles which go to the marrow of the back-bone; truly it cannot be, but that both the marrow, and the nerves, which iſſue out of it, be compreſt; from whence what elſe can follow, but the reſolutions of thoſe parts, into which thoſe nerves are implanted, and to which they impart the faculty of motion? This opinion ſeems to mee to bee wonderfully confirmed by a certain pretty obſervation, which the learned *Cornelius Gemma* has in his book, *de hemitritæo peſtilenti*. A certain ſtudious young man, ſayes he, through the whole courſe of his diſeaſe, had his left eye leſſe then the other. He was pain'd in the left ſide, eſpecially all the time the fit raged; but about the *criſis* or change thereof, the artery of his left leg being ſwoln up was moved according to its length, that being to be ſeen by us it ſeemed to be turned upward and downward like a rope pull'd back. Who will not here willingly confeſſe, that this matter was in the arteries, when the *criſis* was made by them? But from this that hath been ſaid a reaſon may be alſo given of another obſervation of *Galen*, which is 4 *de locis affect.* c. 4. where he ſayes thus: In a certain man, who was troubled with a vehement inflammation of the lungs, as well the outer, as the inner parts of his arm, from the cubit to the very ends of his fingers labour'd with difficulty of ſenſe, and their motion alſo was ſomewhat empair'd. In the ſame man alſo the nerves, which are in the firſt, and ſecond diſtances betwixt the ribs, ſuſtained harm. *And a little after*, This man was quickly reſtor'd to his health, to wit, a medicine being applyed to the place, from whence the nerves iſſue forth, near to the firſt, and ſecond ſpaces betwixt the ribs. By reaſon of the ſame branches betwixt the ribs *John Valeriola*, the ſon of that Phyſitian, whoſe obſervations we have, being yet a boy ſuffered Convulſion-fits in a grievous Pleuriſie.

The explanation of a place in *Hippocrates*.

The arteries called *Phrenicæ* of the midriffe, [xx] are two; one of each ſide, which ariſing out of the trunk, preſently after it is come forth of the hollow of the cheſt, being divided into more branches, are ſcattered into the midriffe, but eſpecially into the lower ſide of it, near to the rack-bones of the back. They ſprinkle ſome ſmall twigs alſo into the upper part, which afterwards go to the *Pericardium* or purſe of the heart, there where it growes to the midriffe.

2. *Phrenicæ* the arteries of the midriffe.

The *Cœliaca* or Stomach-Artery is but one, ſo called, becauſe it ſends over branches to the κοιλία, that is, the Stomach. This, being moſt like to the ſpleenick branch of the Gate-vein, affords many branches to the Stomach, Liver, Bladder of Gall, Kell, the gut *Duodenum*, the beginning of the *Jejunum* or empty Gut, a part of the *Colon* or Colique-Gut, the Sweet-bread, and Spleen. But it ariſes out of the foreſide of the body of the Trunk, and being ſtayed up all the way by the upper part of the lower membrane of the Kall, is divided into two notable branches, but of unequall bigneſſe, one of which goes to the right, the other to the left: that is the leſſe, this the greater. *The right branch* therefore is joined with the deſcendent Gate-vein in the *Pancreas* or Sweet-bread, that is placed under the hinder part of the Stomach, and leaning there upon the membranes of the Kall goes to the Liver; and its ſmalneſſe is worth the taking notice of, if you look upon the largeneſs of the Liver, which the Ancients long ſince, and many at this day have made the work-

3. *Cœliaca.*

The two branches thereof. The right branch.

houſe of the bloud. But it is inſerted in the hollow part, near to the Trunk of the Gate-vein, and is ſo ſmall, becauſe that part of the Liver, which entertains the roots of the Gate-vein, needed not a greater Artery; but the other part which hath the propagations of the Hollow-vein, receives great plenty of vitall ſpirit ſent over from the Heart through the Hollow-vein. Yet before it enters into the Liver, it diſſeminates in the way many ſurcles, and thoſe partly from its upper ſide, partly from its lower: *from the upper ſide* two, firſt, that which I call *Pyloricus*, which ariſes in the mid-way, and being divided into many little branches is ſcattered into the back-ſide of the right orifice of the Stomach. The other is called *Cyſticæ gemellæ*, the Twin-Arteries of the bladder of Gall, which are two little branches, and go into the bladder of Gall, and preſently are divided into many propagations. *From the lower ſide* likewiſe two ariſe. The firſt is *Epiploïs dextra* or the right Kall-Artery, which is implanted into the right ſide of the lower membrane of the Kall, and part of the Colique-Gut annexed thereunto. The other is cleft into two branches, of which one called *Inteſtinalis*, the Gut-Artery paſſes on to the *Duodenum*, and beginning of the *Jejunum* or empty Gut: the other, named *Gaſtro-epiploïs dextra* the right Stomach and Kall-Artery, ſomewhat larger then the former, turns down to right ſide of the bottome of the Stomach, and being ſupported by the upper membrane of the Kall, iſſues out ſome ſhoots from the upper part to the fore and back-ſides of the Stomach; but from the lower to that membrane of the Kall, upon which it leans. *The left and greater* branch is called *Arteria Splenica* the Spleen Artery, which ſticking to the lower membrane of the Kall, and the Glandules placed therein, paſſes on together with the Spleen-vein, to which it is faſtened, and in like manner diſtributes its propagations to the Spleen. But in the way likewiſe it diſtributes branches from both parts of it: *from the upper* iſſues *Gaſtrica* the Stomach-Artery, which reaches into the middle of the hinder part of the Stomach, or that, wherewith it leanes upon the back, and aſcending from thence it compaſſes the left orifice of the Stomach round about like a crown, and diſperſes little twigs, partly upward to the end of the Gullet, partly downward, and thoſe greater, and more numerous, into the Stomach, and ſo it makes the *Arteria Coronaria* or Crown-Artery, like to the Crown-vein, which ariſes from the Gate-vein, as we have ſaid in the fore-going Treatiſe. But *from its lower ſide* the Spleen-Artery ſends out the *Epiploïs ſiniſtra*, or left Kall-Artery, about that part, wherewith it now attains to the Spleen, which runs out into the left ſide of the membrane of the lower part of the Kall. This Artery preſently after its riſe is cleft into two branches, which part very far aſunder from each other, from which many other Arteries ariſe, that are all conſumed upon the ſaid membrane of the Kall, and the Colique gut, that is tyed thereto. Theſe branches being iſſued, the Spleen-Artery draws nearer to the Spleen, and juſt like the vein of the ſame name, which accompanies it all the way, is cleft into two branches like the Letter Y, one of which may be called the upper, the other the lower, which afterward entring by the hollow part of the Spleen are ſplintered into an infinite number of little ſprigs, ſo that there are five times more Arteries there, then veins. Whence it comes to paſſe, that in inflammations of the Spleen, if you lay your hand to the left *Hypochondrium*, or place under the Griſtles of the Baſtard-ribs, it ſeems to pant. But before this entry of the Artery of the lower branch makes a notable *anaſtomoſis* or inoculation with the lower branch of the vein, and propagates a twig to the lower membrane of the Kall. But from the upper branch iſſues one called *Gaſtro-epiploïs ſiniſtra*, the left Stomach and Kall-Artery, which being faſtened to the upper membrane of the Kal is derived into the left ſide of the bottom of the Stomach, beſtowing little branches upon the fore and back-ſides of it, or alſo upon the upper part of the Kall. Another iſſuing from the upper branch makes the *vas breve Arterioſum*, or ſhort Arteriall veſſell, carried, like the vein its name-ſake, to the left ſide, and orifice of the Stomach.

Propagations from its upper part.
1.
2.
From its lower part.
1.
2.
The left branch
Propagations from its upper part.
From its lower part.
Its diviſion.
The uſe of the right branch.
Why ulcers are more frequent in the great guts.
The uſe of the cleft.

The uſe of the right branch, is this, as often as the bladder of Gall is obſtructed, to carry down choler to the Guts, and eſpecially to the *Colon*, into which ſome of its branches are implanted. Which is the reaſon, that in bloudy Flixes the Ulcers are almoſt alwayes found in the great Guts, and eſpecially in the *Colon*, very ſeldome in the ſmall ones. For this artery, when either the Liver being over hot breeds abundance of choler, or the bladder of Gall is obſtructed, receiving into itſelf ſtore of choler carries it directly over to the *Colon*, or Colique Gut. In like manner the uſe of the left branch, or Spleen Artery, beſides the common one, is to throw down choler, melancholy and wheay humors, if at any time the Spleen abound with them, to the Guts. Moreover by this ſame way the wateriſh humors in ſuch as have the Dropſie, are ſometimes committed either to the Guts, or to the Kidneys and Bladder. This ſame branch is that by which the drink paſſes ſo ſodainly through the whole body, and by which ill humors are caſt out by vomit. This ſame is the cauſe, that upon a full Stomach we make little water; but more when the concoction therein is finiſhed. For the Stomach being much diſtended preſſes it; but that once empty, it can perform its office. This ſame branch teaches us that a ſlender diet is to be preſcribed to them, who are to take purges, that the way may be open for the medicins, as well that, by which

the

the excrements are ſent over to the Stomach, as that, by which they are conveyed to the Guts. This ſame branch alſo, if you adde the two Meſentericks, is the ſeat of the hypochondriacall Melancholy. For this diſeaſe ariſing from the obſtruction of the entrails, which are contained in the loweſt belly, it is neceſſary that the arteries here ſhould ſuffer very much, which the very Symptomes, that happen in this diſeaſe, may ſufficiently inform us.

4. *Meſenterica ſuperior.*

*Meſenterica ſuperior*, the upper Artery of the Meſentery [y] ariſes a little below the Cœliacall, being diſtributed like the Meſeraick vein (which is its companion) with numerous propagations into the Guts called *Ilium* and *Jejunum*, as alſo that region of the *Colon*, which reaches from the Hollow of the Liver as far as the right Kidney, and ſo for the moſt part into the upper part of the Meſentery. In which place it is to be obſerved, that the Artery ſometimes lies upon the vein, ſometimes on the contrary the vein upon the Artery, and ſo is carried betwixt both the Membranes of the Meſentery. But theſe Arteries in many places in the Meſentery have Glandules, which were made for the free perſpiration of the veſſels, and eſpecially of the Arteries, whereby it comes to paſſe, that theſe Glandules labouring with a hard tumor, or *Scirrhus*, the veſſels are compreſt, and a pining away of the whole body follows thereupon.

An obſervation.

5. *Emulgentes.*

The Emulgent arteries [z] are two, one the right, another the left one. Both iſſue out under the forementioned Artery, where the firſt, and ſecond Rack-bones of the loins are coupled together by the Ligament. But they ariſe out of either ſide of the Trunk, although not directly over againſt one another, as alſo it is in the Emulgent veins, the right one being lower then the left. Theſe Arteries, when they come to the Kidney, are cleft into two branches, with which they are inſerted into the *ſinus* or channels of the cavity of the Kidneys, and like the veins are conſumed in an infinite number of little ſprigs upon their ſubſtance. Their uſe, beſides the common one, is to purge out the whey, which is found in great plenty in the Arteries.

Their uſe.

6. *Spermatica.*

The ſpermaticall, or ſeed-arteries [α] are likewiſe two, which ariſe out of the forepart of the Trunk of the great Artery, their originals touching each other; for the left Artery iſſues not from the Emulgent, as the left ſpermaticall vein does. Afterward in their deſcent they are made faſt to the veins of their own ſide, and in men are carried through the proceſſes of the *Peritoneum* or Rim of the Belly to the Teſticles: but in women, when they come ſomewhat near to the Teſticles, they are divided into two parts, one of which is carried to the Teſticles, the other to the bottom of the womb. But the arteries do ſo come to the womb, that they only water it at the ſides, and pierce not at all into the inner parts of it. Which truly came to paſſe by the great providence of wiſeſt nature, ſince it had not been ſo ſafe to have brought them down to the inner ſurface of the womb, by reaſon that in the coming forth of the child very great iſſuings of bloud would be cauſed to the no ſmall danger of the woman in Child-bed, if the Arteries had been annexed to the Womb on the inſide. Hence alſo it is, that in the time of delivery they flow by little and little, not ruſhing down with violence.

7. *Meſenterica inferior.*

*Meſenterica inferior*, the lower Artery of the Meſentery [β], ariſes near to the *Os ſacrum*, or great bone, a little above the diviſion of the Trunk into the Iliacall banches, and goes into the left ſide of the *Colon*, and into the ſtrait gut, deſcending with the hæmorrhoidall veins to the very end of the Fundament, and making the hæmorrhoidall Arteries. It is queſtioned concerning the uſe of both the Meſentericks, whether beſides the common, they have any peculiar one. For *Galen* in his 4. of the uſe of the parts, ſeems to make mention of ſome other when he would have ſome part of the *chylus* to be attracted by them. And in the book, whether bloud be contained in the Arteries, in the fifth Chapter, he ſayes: If we divide the loweſt belly, and the inner membrane, we ſhall plainly ſee the Arteries in the Meſentery filled with milk in Kids newly yeaned, but in living creatures that are grown, full of ſomething elſe. In which words Anatomicall experience teaches us, that not onely the Meſaraick veins, but Arteries alſo do manifeſtly draw the *chylus* to them. Which being ſo indeed, it is altogether to be beleeved, that the *chylus* is either afterward tranſported by them into the veins, or elſe turned into bloud by the Arteries themſelves. Nor will this ſeem wonderful to any one who ſhall conſider alſo that the mothers bloud is conveyed through the Umbilicall Arteries to the child, whileſt it is yet ſhut up in the Womb. But if the bloud which is received by the veins ought yet to be better worked, as any diligent inquirer into nature will conclude it ought; truly that which is received by the Arteries will require to be ſo much the more exactly laboured, by how much the better it is, then that of the veins. But it is ſo laboured in the Arteries themſelves, and in the Spleen, being haled into the Cœliacall Artery, and carried to the Spleen. And this is an excellent uſe of the Meſenterick Arteries, whileſt a man enjoyes perfect health, beſides which wee will adde another alſo, as often as he leaves to be in health. For theſe Arteries take to them the excrements of the whole body, that they may carry them down to the Guts, in like manner as the veins do, by which nature doth both attract the *chylus*, and likewiſe expell the noiſome humors out of the body, as choler, phlegm, and melancholy. Choler is thus expelled oftentimes in continuall and intermitting cholerick feavers, a ſolution whereof follows by a looſneſſe. Phlegm is ſo

Its uſe.

expell'd, as often as bloudy fluxes happen to ſuch as have the gout in the feet, which eaſe them of their pain, if the intent of nature be advanced by the help of a wiſe Phyſitian. Laſtly melancholy is conveyed out by both the Meſentericks, but eſpecially by the hæmorrhoidall branch; whence *Hippocrates* ſayes, 6. *Epidem.* He which has the Emroids naturally, ſhall neither be troubled with the pain of the ſide, or inflammation of the lungs, nor with fellons or black puſtles, called *Terminthi*, nor with the Leproſy, canker, or other diſeaſes. For there is a very great ſympathy betwixt the breaſt and the hæmorrhoidall artery, becauſe the trunk, out of which it ariſes, deſcending from the heart, preſently after it firſt iſſues from thence, propagates the Intercoſtall branches. Moreover all black cholerick humours are purg'd by this means out of the whole body, that cankers, and leproſies cannot be cauſed by them. From theſe voluntary purgings which nature it ſelf has found out, wee may now judg of ſuch as are cauſed by the help of a Phyſitian, and may be termed Artificiall. For an opinion of ſome men hath prevailed much in our age, that the body cannot be purged by clyſters, but only by thoſe medicins, which are taken at the mouth. But I will not only believe, but alſo being taught it by experience can witneſſe, that, if the clyſters contain in them purging medicins, the whole body is very commodiouſly cleanſed. For the whole colick gut receiving the matter of the clyſter, the vertue itſelf of the medicin draws down the noiſome humors by the arteries out of the *Aorta* or great artery. Which being granted, we may give a reaſon (what we have ſeen very often) why Suppoſitories made of white hellebore produce the ſome ſymptomes, as are wont to be cauſed in them, who have taken in white hellebore at the mouth. In like manner from hence we may fetch the reaſon; why the belly is ſtrongly purged, the region about the navell, being anointed with purging medicins. For the vertue of the medicin is attracted by the arteries, and by them afterward it purges. Theſe arteries are they, by which the diſeaſe of the colick is changed into the gout, and on the contrary the gout into the colick, as we have it in *Hippocrates*, 6. *Epidem. Sect.* 4. where he ſayes: One, that was vexed with the pain of the colick on the right ſide, had ſome eaſe, whileſt the gout held him; but this diſeaſe being cured, he was pained more. The reaſon hereof was this, becauſe that humor, which cauſed the gout, was carried out of the joints to the colick gut, whereby the colick diſeaſe was increaſed. *Laurentius*, inquiring into the cauſe of this, refers us to hidden and unknown paſſages, to which, it ſeems to me, that we need not fly, if we ſay, that the humors are brought out of the crurall arteries into the trunk, and out of this into the Meſenterick branches, and laſtly, out of theſe into the guts; for this is the ſhorteſt, and moſt convenient way. Nor is there any reaſon, that we ſhould be a fraid of that pollution of the vitall ſpirits, which they will object to us if the excrementitious humors paſſe through the arteries; for this betrayes their great ignorance as well in Anatomy, as in ſolid phyſick; and it would be very eaſie, if I would digreſſe, to prove in this place, that a great part of the humors in our body flow down through the arteries. For in them the ſtrength of nature exceeds, and is more vigorous, that whenſoever it is provoked, it is moſt apt to expell; and the bloud being ſtirred by their continuall beating, as alſo by its own nature, makes all that is therein more fit to flow. And who will not beleeve that excrements are carried through the arteries, who conſiders the flowings down from the ſpleen, in which there being five times more arteries, then there are veins, truly it is neceſſary that that ballaſt of the ſpleen be carried out through the arteries?

An obſervation.

VVhy anointing of the navell with ſuch things as purge, looſen the belly.

How the colick is changed into the gout; and on the contrary.

8. *Lumbares.*

The four *Lumbares* or loin-arteries [γγγ] ariſe out of the backſide of the trunk of the great artery, all along as it paſſes through the region of the loins. They run through the common holes into the rack-bones of the loins, and to their marrow, and alſo into the neighbouring muſcles. And at the ſide of the marrow, after they have entred the rackbones, they climb upon both ſides to the brain together with the veins of the loins. But they are all equally big, if you except thoſe two, which iſſue out near to the *os ſacrum* or holy-bone, which are not only derived into the rack-bones to the marrow, and to the muſcles thereabout, but are alſo ſent overthwart through the *peritonæum*, and muſcles of the *Abdomen*. The two laſt are by ſome called *Muſculæ ſuperiores* the upper muſcle-arteries, and are diſtinguiſht from the *Lumbares*. And theſe are the arteries, which if we obſerve, we ſhall eaſily give the reaſons of many things, of which Phyſitians do ſtill diſpute very hotly; but eſpecially of that moſt difficult queſtion, which is controverted among Phyſitians, by what wayes, and in what manner the colick ends in a palſie or in the falling ſickneſſe. For we have the obſervation in *Paulus Æginetalib.* 3. *c.* 43. where he ſayes: the colick, as it were by a certain peſtilent contagion, ended with many in the falling ſickneſſe, with others in a reſolution of the joints or palſie, their ſenſe remaining; and they who fell into the falling ſickneſſe, for the moſt part dyed; but they who fell into the palſie, were moſt of them preſerved; the cauſe of the diſeaſe being carried to another place in the ſolution. For the humor, that cauſed the diſeaſe, came back out of the colick gut through the meſentericall arteries, from whence being afterward tranſported into the trunk of the great artery, it came alſo to the *lumbares* or arteries of the loins, which ſwelling with bloud preſt together the neighbouring nerves, from which came the palſie in the feet. And this we have often obſerved, as well in our ſelves, as in others, eſpecially in former years, when theſe diſ-

How the colick diſeaſe ends in a palſie or Epilepſie.

eaſes

eaſes at *Padua* were Epidemiall. Yet the Palſie is not alwayes a perfect one, but often (as I am wont to call it) imperfect, becauſe the power to walk is not wholly taken away, but the diſeaſed ſtand upon their feet with a great deal of difficulty. Many at that time being deceived in the knowledge of the diſeaſe, miſtaking this for a great weakneſſe of body contracted by their ſickneſſe, endeavoured to take it away by eating and drinking largely, but in vain. This alſo is the cauſe, why the Falling-ſickneſs, and Lethargies too, as we have oft-times ſeen, follow after the Colick, becauſe the matter being ſent over from the Meſenterick arteries to thoſe of the loins, may eaſily go from them into the brain, to which thoſe very veſſells are carried.

But the trunk of the great artery, when it is come to the laſt rack-bone of the loins, having taken its journey all the way, which we have ſhewed, under the hollow vein, at the left ſide, here gets above the vein, leſt it ſhould be worn away in that continuall motion by the hardneſs of the holy-bone. But it is divided, no otherwiſe then the hollow vein is, into two notable branches [S. S.] which are called by Anatomiſts the Iliacall arteries from their ſituation, and being carried downward obliquely to the thigh reſemble the ϒ of the Greeks turned upſide down. But they alſo juſt like the Iliacall veins, to which they are exactly anſwering, before they be implanted into the thigh, ſhoot out a pretty number of branches. But from the lower ſide of the artery before the Iliacall branches be divided, iſſue forth *ſacræ* the holy arteries [ϑ] which are notable ones, and carried downward, leaning upon the holy-bone, paſſe through the holes thereof, and run to the marrow and backſide of the bone. And through theſe alſo there is a way for the matter, that makes the Colick, to cauſe the Palſie of the legs. *Sacræ.*

After this a little below the diviſion of the trunk, the Iliacall arteries are ſubdivided into two branches, one of which is the inner and leſs; the other outer and greater. *The leſſe and inner* [T] iſſues out two propagations, one from its outſide, the other from its inſide. *The outer* [ε] is commonly called *Muſcula*, by us more ſtrictly *Glutæa* the muſcle of the buttocks, becauſe it runs down with its name-ſake vein, betwixt the holy and hip bones, where they part one from another, and ſcatters many twigs into the muſcles, which lye upon the *Os Ilium*, or hanch-bone, called *Glutæi*, or the muſcles of the buttocks; becauſe they are the authors of them. The diviſion of the Iliacall arteries into an inner and outer branch. Propagations of the inner or leſſe branch. 1. *Glutæa.*

*The inner* is called *Hypogaſtrica* [ζ] which is very notable, and large, and, being carried directly down to the lower ſide of the holy-bone, it affords certain propagations in men to the bottome, and neck of the bladder, as alſo to the ſtrait gut, which alſo may bee called the Hæmorrhoidall arteries; but in women, to whom this branch is ſomewhat larger, it diſtributes a great number of propagations, beſides thoſe to the fore-named parts, into the lower region alſo of the bottome of the womb, and likewiſe into its neck. Hence we may gather the reaſon, why, if the womb reach to the middle of the hip, Convulſions are cauſed, as *Hippocrates* witneſſeth, *lib. de natura muliebri*. As alſo if the womb fal down to the hip, why the monthly flowers are ſuppreſt, and a pain is cauſed in the ſoftneſs of the ſides, and in the loweſt belly. For the blood which nature drives to the wombe, cannot bee laid in there, the arteries being preſt together by the falling down of it; ſo that neceſſarily flowing back, it fils the neighbouring veins and arteries, which ſwelling up cauſe theſe pains. For wee have oft-times ſeen in diſſections theſe veins ſo ſwoln, that they have been ſeven fold bigger then themſelves. Hence alſo a reaſon may be given of the thirty ſecond Aphoriſm of the fifth ſection in the ſame *Hippocrates*, where he witneſſes, that a woman vomiting blood is rid of her diſeaſe, upon the iſſuing forth of her tearms. Which happening by the conſent of all by revulſion or attraction of the humour to a contrary part, and that not by the benefit of the veins, becauſe the veins of the ſtomach ariſe out of the gate-vein, but they of the wombe from the Hollow one; there is no other ſympathy to bee ſought for, then that which is cauſed by the arteries, eſpecially when the Hypogaſtrick or artery of the lower part of the loweſt belly is not far diſtant from the Cœliacall, or artery of the ſtomach. Hence likewiſe a reaſon will be given of the Aphoriſm that follows this, wherein he judgeth the *Hæmorrhagia* or abundant iſſuing forth of blood at the noſtrills to bee profitable when the monthly courſes do fail. The remaining part of the leſſer Iliacall artery deſcends, and brings forth the Umbilicall or navell artery [ππ], which is carried down near to the length of the great artery, and is tyed with ſtrong membranes to the ſides of the bladder of urine. But it loſes its hollowneſſe in thoſe that are once out of the wombe. After this [θ] like the Iliacall vein which is joined to it, it goes through the hole of the ſhare bone, or *os pubis*, which before it be paſt, it takes to it a propagation iſſued from the outer Iliacal branch, and ſo goes out of the hole, and being departed from it ſpends it ſelf, in like manner as the inner Iliacall vein does, upon the muſcles; partly thoſe with which the hole is ſtopt; and partly thoſe which ariſe from the ſhare-bone. At length being terminated at the middle almoſt of the length of the thigh, the end of it meets [ο], and is united with the ends of the branches [ν] of the inner muſcle-artery of the leg, of which we ſhall ſpeak in the next Chapter. 2. *Hypogaſtrick.* *Arteria umbilicalis.* Propagations of the outer or greater Iliacall branch.

*The greater or outer Iliacall artery* [V] produces likewiſe two propagations; the *firſt* of which [i] is called *Epigaſtrica*, which ariſing from the outſide of it, a little before it paſſes through the *peritonæum* or rim of the belly is reflected upward, and aſcends by the inſide of the ſtrait muſcle 1. *Epigaſtrica*, or the artery of the upper part of the lower belly.

muſcle til about the navel it be inoculated with the deſcendent Mammary artery. The other [λ] is called *Pudenda*, which is a little inner propagation, being not divided into ſo many branches, as the vein of that name is. But it ariſes preſently after the artery is gone out of the *peritonæum*, and being carried overthwart along the commiſſure or joyning together of the ſhare-bones, is ſpent at the privy parts upon the skin of the yard. That which remains of this trunk goes into the *crus* [X], whereof we ſhall now ſpeak.

*Pudenda* or the artery of the privy parts.

## CHAP. IV.

### *The propagations of the outer Iliacall branch, which are diſtributed through the* Crus *or great foot, containing the thigh, leg, and foot.*

AFter that the outer branch [V] has propagated the fore-mentioned branches, it departs out of the *peritonæum* or rim of the belly, and at the groin is carried into the *crus*, by the ſame way which the crurall vein takes, under which it goes, and is joined in company therewith every where, and ſo it makes the trunk of the Crurall arterie [X], (as we will alwaies call it). But preſently after it hath got beyond the *peritonæum*, it iſſues forth a propagation from the outſide, which is called *Muſcula cruralis exterior*, the outer muſcle-artery of the *Crus*, which being carried downward is propagated into the muſcles that cover the foreſide of the bone of the thigh. Sometimes over againſt this, but oftner a little below, yet of the inſide another is brought forth, called *Muſcula cruralis interna*, the inner muſcle-artery of the *Crus*, [ν] which is diſtributed in many branches through the third bending muſcle of the thigh, called *Triceps*, and thoſe on the inſide of the thigh, as far as the knee; the ends of which branches are joined with the end of the inner Iliacall artery, which we told you deſcends through the hole of the ſhare-bones to the *Crus*. Theſe propagations being diſpatcht away, the crurall trunk deſcends from the groin, together with the crural vein; and is ſo bent backward near to the bone of the thigh, that when it is come to the ham, it ſtands betwixt the two hindmoſt heads of the thigh. For prudent nature does alwaies obſerve this, to carry down the veſſells about that ſide of the joint where the bending is, leſt if they ſhould go on that ſide whereon the joint is extended, they ſhould be compreſt. But in the very mid-way as it were, as it runs down through the thigh, it ſends out a propagation [π] which breaking into more ſurcles runs out through the muſcles that are ſeated on the backſide of the thigh, together with the ham-vein; and at length deſcending through the ham (whence it is called *Poplitea* the ham-artery) is diſtributed with many ſprigs into the calf of the leg. But whilſt it ſtayes in the ham, it ſends out a propagation [ϱ ϱ] on each ſide, to the ſides of the joint of the knee, which then ſinking deeper, are conſumed partly in the joint it ſelf, partly upon the muſcles called *gaſteromenii* that make the calf; from whence they are called *Surales*, the arteries of the calf.

The trunk of the crurall artery and its propagations ere it bee divided.

1.

2.

3.

4.

After that the Crurall trunk lyes in the ham [Y], it ſends forth a propagation from its outſide [σ] which runs down near to the *Fibula* or leſſer bone of the leg, and is hid betwixt the muſcle, that moves the foot outward, and the ſecond bending muſcle of the inſtep, and diſtributes it ſelf into the reſt, that lye on the forepart of the leg, as far as they are fleſhy, and till they begin to be contorted by the outer ankle. A little under this ſame another artery [τ] is brought forth out of the backſide of the trunk, which runs down as far to the mixing together of the tendons of the calf-muſcles. Then another [υ] iſſues out of the ſame backſide of the trunk, but under the ſecond, which deſcending and paſſing through the tranſverſe ligament, runs down by the top of the foot, and is diffuſed into the muſcles that move the toes outward. The remainder [τ] of the trunk is carryed downward by the backſide of the leg, and about the inner ankle offers a ſurcle [φ] to the foot, which goes to the muſcle of the great toe, and creeps through the top of the foot. But the trunk it ſelf lying hid among the tendons of the muſcles of the toes is cut [χ] into two branches; of which the Inner [ψ] beſtowes two ſurcles upon the great toe; two upon the fore toe, and one upon the middle; the outer [ω] two upon the little toe, and two upon the toes next to it, on the lower ſide. But although the progreſſe of the arteries be for the moſt part ſuch, as we have deſcribed, yet what we have ſaid formerly of the veins, that their diſtribution varies much, not only according to the diverſity of bodies, but alſo of ſides in the body of the ſame man, is true alſo of the arteries, which in divers men are diverſly diſtributed.

AN

# An Explanation of the Table of the Arteries.

This Table comprises the delineation of the great Artery, entire and free from all the parts.

A — THE large beginning of the great artery, where it issues out of the left ventricle of the heart: but presently after its rise, and before it yet falls out of the pericardium or purse of the heart, it shoots forth the two Coronary arteries,

a a — a, a, which encompasse the basis of the heart in manner of a crown.

B — But presently having past the pericardium it is divided B into two trunks; one of which is the Ascendent C, the other the Descendent one Q.

C — The Ascendent trunk C, is by and by divided into the two subclavian arteries

D D — D D, both which when they have attained to the first rib, scatter many propagations; partly from the higher, partly from their lower side.

From the lower side issues Intercostalis superior,

b — the upper artery between the ribs, b, communicating particular twigs to the distances of the four upper ribs.

From the higher side issue three. The first is vertebralis, the artery of the rack-bones,

c — c, creeping on by the transverse processes of the rack-bones of the neck, as far as to the skull. The second mammaria the artery of the

d — dugs, d, which descending under the breast-bone, runs out as far as to the seat of the navill, and distributes sprigs into the distances of the gristles of the true ribs, and then into the muscles that lye upon the breast; at length about the navill it joins by anastomosis or inoculation, x, with the ascending Epigastrick artery, 1. The third cervicalis or the artery of the back side of the

e — neck, e, is propagated to the muscles on the back side of the neck, as far as the nowl of the head.

These branches being issued out, the subclavian artery goes to the arm-pit, and takes the name of Axillaris, about

E — E, and so is diffused into the arm. Yet before it enters thereinto, it shoots out some twigs from both parts of it: from the lower three; of which the first,

f — f, is called scapularis interna the inner blade artery, because it is spent upon the muscles that cover the hollow side of the shoulder-blade. The second is Thoracica superior the upper chest artery,

g — g, dispersed into the muscles on the fore side of the chest. The third

h — h, Thoracica inferior the lower artery of the chest, which descending along the sides of the chest, is inserted into the muscle called Anisalptor, that moves the upper part of the arm backward. Betwixt g and h a little branch is placed, one of them which here are disseminated into the glandules of the arm-pit. From the upper part

i — issues one, i, called scapularis externa the outer blade artery, being disposed of into the muscles, on the outside of the shoulder-blade.

F F — In this place the axillary artery changes its name, and is called Brachialis the trunk of the arm, that is undivided as far as G, scattering two twigs

l m — l and m into the muscles that cover the bone of the upper part of the arm on the back side; and two other n n, one of each

n n — side about the bending of the cubit.

G — The parting in twain of the Brachiall artery under the bought of the cubit into an outer H, and inner branch I.

H — The outer branch of this division, or Radieus, running straight along the radius or lesser bone of the cubit to the

o — wrist, and distributing a branch o into the muscles seated betwixt the first bone of the thumb, and that of the metacarpium or after-wrist, which sustains the fore-finger, and then three other,

p p p — p p p, which are dispersed into the first outer fingers, the thumb, and wit, the two fingers next thereunto.

I — The inner branch, or Cubiteus passing along the greater bone of the cubit, is at length consumed in a double branch upon the two inner fingers; to ring-finger and little one.

L — The remaining part of the Ascendent trunk, which near to the upper part of the breast-bone is cleft into two branches

M M — M M called Carotides, or the sleepy arteries. These tend directly upward by the sides of the neck, and being come to the chops are divided into two branches about N, one of which is the outer O, the other the inner P.

O — The outer Carotis propagates twigs 4 to the Buccæ or cheek puffes, and to the muscles of the face; but about the ear it is cut into two branches,

q — a formost one, q, which is caried through

r — the Temples; and a hinder one, r, that is disseminated along the back side of the ear under the skin.

P — The Inner Carotis, going to the skul is divided near to the basis thereof into two branches; of which the one

f — and lesser, f, which goes into the sinus on the side of the thick membrane, is cut off here, whereabout it sinks into

the

t the skull: the other and greater, t, enters the skull, through a peculiar hole bored for it in the temple-bone.

Q The Descendent trunk of the great artery, reaching downward to the rackbones of the back.

From this before its division at R, many propagations are scattered, which we will now rehearse in order.

First then are Intercostales inferiores, the lower arteries between the ribs, u u u, distributed to the distances of the eight lower ribs, from which propagations are brought to the marrow of the back-bone; and to the muscles that grow to the back and chest. After this the trunk passing on distributes two more, called Phrenicæ the arteries of the midriffe x x, because they are disposed of into the midriffe. Then follows Cœliaca or the stomach. After that Mesenterica superior, the upper artery of the Mesentery, y, reaching out into the guts Jejunum, and Ileum, as also into that part of the Colon, which reaches from the hollow of the liver as far as the right kidney. After this the Emulgent arteries, z, propagated to the kidneys. Then spermaticæ, the seed arteries, α, going to the testicles, under which is Mesenterica inferior the lower artery of the Mesenterie, β, departing into the left side of the colick, and into the strait gut, and making the hæmorroidall arteries. Lastly Lumbares the arteries of the loins, γ γ γ, which going to the rackbones o, the loins joint by joint, are distributed, into the peritonæum or rim of the belly, and the muscles growing to the rack-bones.

R These branches being issued forth, the trunk about the fift rack-bone of the S S loins, is divided into two branches S S called the Iliacall, both which are again broken into two other, an inner branch T, and an outer one V. But before this division in the very parting in twain of the Trunk, arises sacra the δ holy artery δ, distributed into the holes of the os sacrum or holy bone, to the marrow thereof.

T The inner Iliacall artery, before it falls out of the peritonæum, issues forth two propagations: from its ε outer side, that called glutæa, ε, distributed into the muscles of the buttocks; from its inner side, that ζ called Hypogastrica, ζ, going into the bladder and yard, and in women also to the bottome of the womb. After this it runs down, and sends forth the umbilicall arteries η η, that tend upward near to the length of the great artery.

θ The remainder under θ, taking to it a propagation from the outer Iliacal artery, slips down through the hole of the share-bone into the Crus, the end of it joining about ο with the inner muscle artery of the Crus ρ.

V The outer Iliacall artery likewise before its going forth of the peritonæum produces two. The first is called Epigastrica, ι, digested into the ι muscles of the Epigastrium, and the straight ones of the abdomen, where it is joined by inoculation, κ, with the descending mammary artery d. The κ other called Pudenda λ, goes to the λ privy parts.

X In this place the outer Iliacall artery having past the Peritonæum, enters the Crus, and begins to be called the Crurall trunk, which issues out more propagations. The first is Muscula cruralis exterior, the outer μ muscle artery of the Crus, μ, that is propagated into the muscles, that cover the foreside of the Thigh-bone. The second is the inner muscle-artery of ρ the Crus, ρ, digested through the third bending muscle of the thigh; and those muscles that are on the inside of the thigh; the endo of it are joined with the ο ends of the inner Iliacal artery about ο. The third is Poplitea, the ham-artery π, running out into the muscles on the back-side of the thigh. The fourth ρ ρ is suralis the calf-artery ρ ρ, which is double, issuing out there, where the crurall trunk is hid betwixt the two lower heads of the thigh, and spreading out on both sides into the joint of the knee, and the two heads of the first extending muscle of the foot.

Y Here the great artery lyes in the ham, where it is divided into branches of unequall bigneſſe.

σ A sprig issuing from its outside, and reacht out to the fibula or lesser bone of the leg, betwixt the muscle that moves the foot outward, and the second bending one of the instep.

Z The trunk descending by the back-side of the leg.

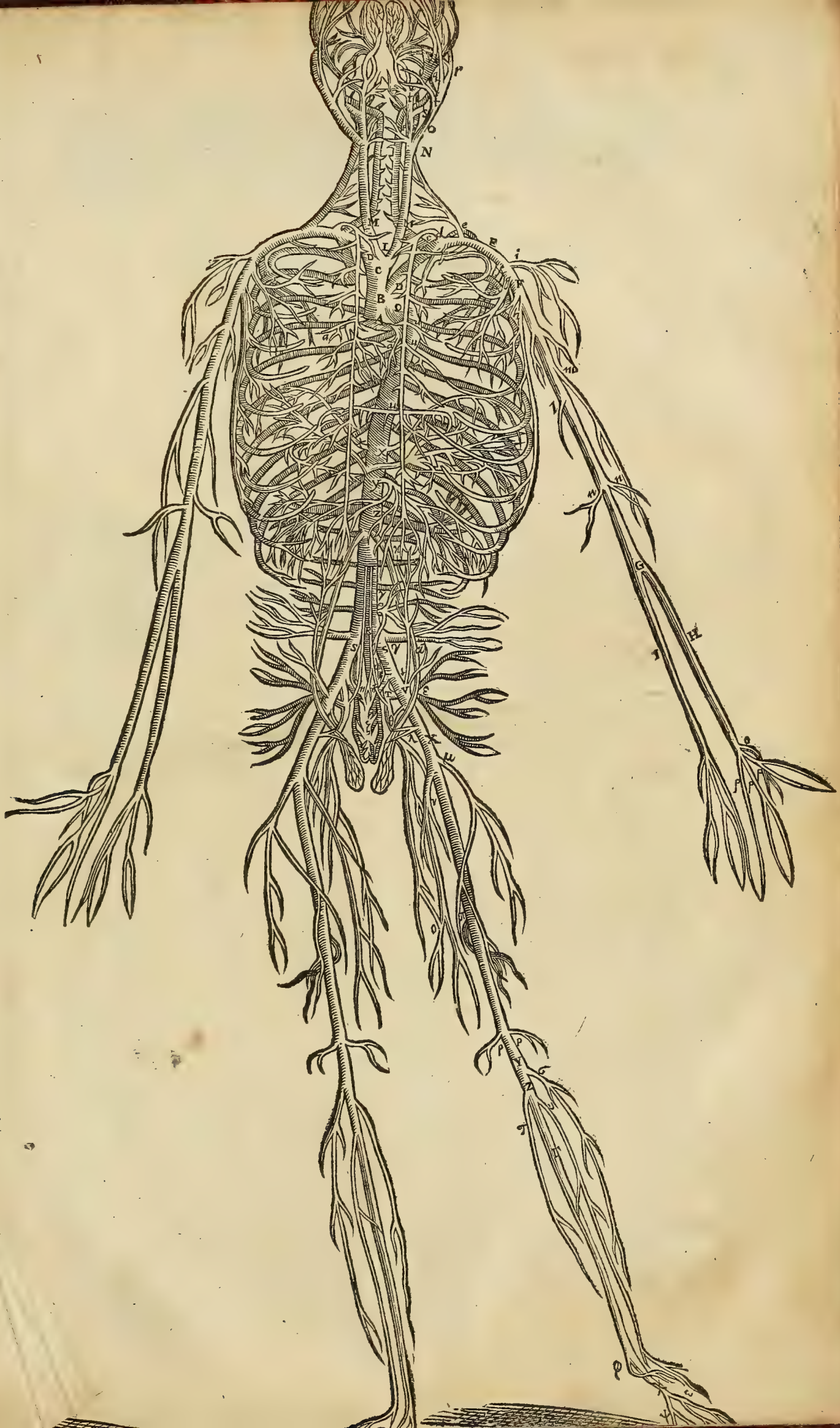
τ A higher branch issuing out of the back-side of the trunk.

υ A lower branch issuing out of the back-side of the trunk.

Γ The remainder of the trunk descending by the leg, which offers a little φ branch φ to the inner ankle.

χ The division of the trunk χ into an ψ inner branch ψ that is propagated to the great toe, and the two next; and an outer, ω ω propagated to the little toe, and the two next to that.

THE



# The third Treatiſe,

## Concerning

# The NERVES.

### CHAP. I.

*Of the nerves of the brain.*

AMong thoſe eight Conjugations, which ariſe from the marrow of the brain drawn out in length, whileſt it is yet contained within the limits of the skull, *that* offers itſelf in the firſt place, *which makes the Optick nerves*, that are ſo famous among all the Maſters of Anatomy. The firſt pair of the brain. For theſe are not only the biggeſt, if you look upon their thickneſſe; but alſo without doubt the ſofteſt of all the nerves of the body. But they ariſe out of the middle of the *baſis* of the brain, on the forepart, according to the opinion of the Ancients, but indeed, if the head be turned upſide down in the diſſection (which is the proper way) out of the beginning of the former trunks of the ſpinall marrow, that their originall is as it were in the back part of the head, and preſently each of them by little and little making towards its mate, they are united (not only joyned, as ſome would have it) over the ſaddle of the wedg-bone, and make one common ſquare body, the marrow within them being mixt together. After that preſently ſeparating again, each of them is carried obliquely into the eye of its own ſide, entring the orb thereof through the firſt hole of the wedg-bone, and ending at the very centre of the eye. In this pair we may eaſily ſhew thoſe two membranes, which are derived to the nerves from the two *meninges* of the brain, as alſo the very inner marrowy ſubſtance, which comes from the body of the brain. Yet the nerve it ſelf is not cleft into more branches, (as the other are) but lying hid makes the coats of the eye; and out of the thick membrane it forms that coat, which is called *Cornea*, the horny one; out of the thin membrane that is called *Uvea*, the grapey one; but out of the ſubſtance of the marrow the *Retina* or coat like a net. For as ſoon as it is arrived at the centre of the eye, theſe membranes are diſplayed, and making a ſphere contain the humors in them. Theſe nerves convey the faculty of ſeeing to the eyes; wherefore, they being obſtructed, or compreſt, a blindneſſe inſues. *Galen* hath aſcribed holes to them, and *Herophilus* for the ſame reaſon called them πόρος ὀπτικὸς, the paſſages of the ſight, teaching that there is a ſenſible hollowneſſe plainly to be ſeen in them, whom for all that almoſt all Anatomiſts do contradict. But I have heretofore ſhewen in the Univerſitie of *Padua*, and in a great aſſembly of men, that there are certain paſſages continuing from the beginning of theſe nerves, as far as to the place, where they meet together, and preſently after that vaniſhing away toward the eye. And therefore I ſhewed that the Ancients may not only be excuſed, but alſo that they writ the truth, eſpecially when none of them have ſaid, that theſe paſſages were great, but only ſuch, as did not altogether eſcape the ſight, if one would make tryall thereof in a great living creature, and by a clear light, and preſently after it is killed. For *Galen* himſelf requires theſe three conditions, 7. *placit.* 4. and *lib. de oculis*, that one may ſee them. But before we depart hence, I will bring in ſome problemes, that, beſides the hiſtory itſelf, I may alſo ſhew the uſe of that, which I ſay, eſpecially when in our time they only for the moſt part follow the ſtudy of Anatomy, who imploy their induſtry in the behalf of Phyſick. The firſt therefore ſhall be, what is the cauſe, that many upon ſneeſing often (eſpecially when they have provoked it for the nonce) have of a ſodain faln blind. This happens, either becauſe the branches of the ſleepy arteries, which are ſo near to the optick nerves, that they touch, are filled, and being ſo, preſſe together thoſe nerves; or elſe be-

Its originall.

Progreſſe.

Inſertion.

*Uſe.*

The holes of the optick nerves.

Problemes.

I.

cauſea copious, and that a phlegmatick humor has faln out of the brain into the optick nerves, and obſtructed them. I have ſeen thoſe, that have been blind through the firſt cauſe, ſometimes cured by a Seton; but I never remember, that any, in whom this aroſe from phlegmatick humors, have recovered, except one having the French pox, who being anointed with quick-ſilver, all the humors melting away, was reſtored to health. But it is not the part of a good and pious Phyſitian, to make uſe of thoſe things, which, being full of danger, may do more harm, if they prove hurtfull, then they can procure good, if they be profitable. And truly it is better not to cure blindneſſe, then to cauſe death; although oftentimes raſhneſſe helps them, whom reaſon helps not, as the moſt elegant of Phyſitians *Celſus* ſayes elegantly. In the mean time in diſeaſes of the eyes, they who practiſe Phyſick, may learn rather to adminiſter thoſe things, which bring the phlegm out by the palat, then to draw the noxious humors to the noſtrils. That I may conceal beſides the danger which they avoid, that more profit ariſes from the medicins, that void the phlegm out of the head through the mouth; which both long experience hath hitherto taught, and Anatomy perſwades, when the optick nerves in their originall are not far diſtant from the palat; but farther from the ſpongy bone, and it is a preternaturall way, by which the humors are carried, as hath been already demonſtrated by
2. the learned *Veſalius*. Then it is diſputed, by what means the eye can fall out of its orb. the optick nerve not being broke, whereof we have very many hiſtories. But it is not hard to give an anſwer, to wit, that the nerves may be very much extended in length. Whileſt therefore this nerve receives much moiſture in the inflammations of the eyes, it eaſily comes to paſſe, that it is ſlackned; but the muſcles themſelves ſwelling very much, when they can no longer be contained in the orb, leap forth out of it. For this falling forth of the eyes moſt commonly proceeds from inflammations; ſuch as are the ſtories of
3. the moſt learned *Vega*, who cured a woman in this caſe by procuring the flux of her terms, and a young man by digeſting ointments. But the queſtion is very worthy to be made mention of, and that gives me an occaſion to explain it, which I have read in ſome Authors, that ſuch as were before blind, upon receiving of a wound overthwart the fore-head, and ſome, upon a great looſneſſe of the belly ariſing on a ſodain, have received their ſight, and that preſently. The cauſe of their blindneſſe was no other, then the compreſſion of theſe nerves proceeding from the neighbour-veſſels, to wit, the veins, and arteries being ſwoln with bloud, which ſuch a wound preſently emptyed. Wherefore I alſo ſometimes, and not without ſucceſſe, in that *ſpecies* of blindneſſe, which the Barbarians call *Gutta ſerena*, open the middle vein of the fore-head, out of which I draw bloud ſo long, till it ceaſes to run of its one accord.

The ſecond pair. Its originall. *The ſecond pair* ariſes, as the ancient Anatomiſts ſay, from the ſides of the *baſis* of the forepart of the brain, near to the originall of the firſt pair. But the new diſſection ſhews, that it iſſues out at the inſide of the beginning of the ſpinall marrow, and that they are ſo united in their originall, that they make one common angle, which is the cauſe why both the eyes are moved together to the ſame ſides. It is much ſmaller, if you compare it with the firſt pair, and harder, and goes out of the skull through the ſecond hole of the wedg-bone, which is ſomewhat long, and ſo it enters the orb of the eye. By and

Branches. by it is divided into many ſprigs, which goe to the muſcles of the eye; and *the firſt* climb-
1. ing up above the firſt pair, or the optick nerves, is diſpoſed of into the two muſcles, as well
2. that, which lifts up the eye-lip, as that which lifts up the eye. *Another* very conſpicuous
3. one is diſſeminated in many ſurcles into the muſcle, which moves the eye inward. *The third, no* contemptible one neither, being divided firſt into two fibres, and by and by into more,
4. is ſent into the muſcle, that draws down the eye: *the fourth*, into the lower or leſſer of the oblique muſcles, that rowls the eye about toward the other angle. At length it iſſues out ſome thin fibres, which being joined with the firſt pair are diſtributed to the outer membranes of the eye, ſo that this ſecond pair is propagated only to four muſcles of the eye, and
*Uſe.* to that, which lifts up the eye-lid. The uſe of this pair is, to impart the faculty of motion to the muſcles of the eyes.

The third pair. Its originall. Banches. 1. *The third pair* ariſes with a very ſmall nerve out of the lower, and hinder part of the marrow of the brain, and runs directly forwards under the *baſis* of the brain, being tyed to the ſecond conjugation, together with which it enters into the orb of the eye through the ſaid ſecond hole of the wedg-bone. By and by it is divided into four branches, of which *the firſt* offers a little branch to the upper, and greater of the oblique muſcles of the eye, or that called the muſcle of the pulley, and then falling out through the hole of the fore-head-bone above the orb of the eye, in the skin, and muſcle of the fore-head,

An obſervation. which ought rather to be called the muſcle of the ey-brows. This branch is diligently to be taken notice of, becauſe I have long ſince obſerved, that, it being hurt with a ſlight wound the eye-lid fell down, whileſt the muſcle of the eye-brow by reaſon thereof fell into a Palſie. I have ſeen alſo the ſame palſie cauſed by cold, and narcotick medicins, ſomewhat unreaſonably applyed for the procuring of ſleep. But hence alſo a reaſon may be rendred, why *Hippocrates* 1. Prognoſtic. reckons it among the ſigns of death in acute diſeaſes to ſleep with the eyes half open. For this is an ill ſign for that reaſon, becauſe it ſignifies,

that

that the nerves are very much dryed, and so the brain itself, whence it comes to passe, that they, who are so diseased, for the most part suffering convulsions afterward dye. In some also a fore-runner of the Falling-sickness is wont to arise from the same cause in the eye-lids, the eyes, and the whole face, when this third pair is pluckt by the humors begetting the falling-sickness, and so a convulsion of the eyes, and face is caused. *The second* branch is carried downward, and falls out through the hole of the fourth bone of the upper jaw, which is under the orb of the eye, and presently scattering into more propagations, on the forepart of the face, is spent upon the muscles, that move the upper lip, and wing of the nose outward, as also upon the lip itself, and the gums of the teeth, called *Incisorii*, or shredders. *The third is* sent through the hole of the second bone of the upper jaw, behind the caruncle, that is placed in the inner angle of the eye, to the wide cavity of the nostrills, being spread throughout its coat, whereby it comes to passe, that it is indued with a very sharpe sense, and being but lightly touch't causes sneezing. *The fourth* goes out through that crevise, which is betwixt the first bone of the upper jaw, and the wedg-bone, in the outer angle of the eye, or through the fourth hole of the wedg-bone, and departs to the inner side of the temporall muscle. The use of this pair is to convey the faculty of moving to the said muscles. 2. *Use.*

*The fourth pair* arises out of the marrow of the brain on the backside, goes out of the skull through the sixt hole of the wedge-bone, and running straight down, propagates three branches from itself. *The first* is presently after its going out of the skull, which being writhed sometimes about in manner of the tendrells of a vine, or gourd, and united to two sprigs of the Auditory nerve (of which we are to speak next) afterward distributes surcles to the temporall muscle, that lifts up the lower jaw, and that which moves it forward from the head, as also to the muscles of the cheeks. After this the pair running farther down, issues forth a *second* branch, which propagates surcles in order to the gums of the upper cheek-teeth called the grinders, and also to the teeth themselves. *The third* branch issuing forth from the backside of the nerve, and entring the hole of the lower jaw-bone that is bored in the inner surface of it, at the originall of the processes, bestows little branches in order to the roots of the teeth, and at length going forth through the foremost hole in the outer surface is terminated in the lower lip, and skin of it. The remainder of this nerve is spent upon the coat of the tongue near to the root, and so gives it the power of distinguishing sapors or tasting. The fourth pair. Its originall branches. 1.

But note in this place, that these two pairs which we have now recounted, I say, the third and fourth, are commonly reckoned for one by Anatomists, and that the third; but with this distinction, that they say this very pair arises with a double root; the one smaller, and the other thicker. They call that the smaller root, which wee set down for the third pair; that the thicker, which we make the fourth. But we distinguish them, because indeed they are not joined together, neither in their originall, nor in their progresse. But that which they account for the fourth pair, seems not to bee distinguished, from the third; as *Valuerda* himself grants, *lib. 7. Anatomiæ. cap.* 4. A note.

*The fifth pair* issues out of the marrow of the brain drawn out in length, on that side whereon a part of the *cerebellum* or after-brain is joined to it, arising out of two nerves, of which one is softer, the other harder. These go out of the membrane together, and enter the organs of hearing, through the hole of the temple-bone, that is bored in the stony processe thereof, being a large one and winding. After this that *harder* part goes forthwith to the foreside, being carried through a peculiar channell, and returns backward again obliquely through the same bone, and departs into the first cavity of the inner ear. From thence being more reflected, it sends forth two propagations, one higher, the other lower; but both pass through their peculiar holes. *The upper* is carried through the transverse hole of the same bone, through which also a little vein passes into the organ of hearing; and a little after it is come forth of it, is joined with that branch of the fourth pair (as we have delivered; but as other commonly count the pairs of the third) which we told you was writhed about, like the tendrell of a Vine. *The lower* goes out through the third hole of the same bone, which is very narrow and winding; and being carried overthwart above the muscle of the lower jaw, that moves it sidewards, descends into the chops, having disseminated a pretty many propagations into the nostrills. But forthwith it is joined with the propagation of the fourth pair, that resembles the tendrell of a Vine, or that sprig which goes to the tongue, from which it passes to the roots of the teeth, and muscles of the cheeks, as also to the skin that goes about the root of the outer, or little ear. Anatomists do beleeve, that by means of this branch it comes to passe, that they who are born deaf, are for the most part dumb also. But that *softer* part of this pair is carried together with the hard part; and when it is come to that first cavity of the inner ear, it is spread throughout it in manner of a membrane, and so it deserves to bee called the Auditory nerve, as ministring all the spirits, that serve for hearing. The fifth pair. Its originall. Its two parts. The harder. The soft part. Its use.

*The sixth pair* arises somewhat more toward the lower and hinder part, then the fifth, The sixth pair and Its originall.

and not with one, but with many little nerves ſevered from each other, which for all that are preſently joined together, although they do not cloſe ſo, as to make one only, but two diſtinct ones alwaies, yet are they contained in one membrane, ariſing from the *Dura meninx* of the brain, which hath deceived many, ſo that they have accounted them for one. Being thus joined, they deſcend both together out of the skull, through the ſecond and third hole of the nowl bone; through which ſame the leſſer branch of the ſleepy artery, and the greater of the Jugular vein enter into the skull. There being then two nerves, the *one* in its egreſſe inclines more to the forepart of the ſaid hole, and is the leſſer of the two; the *other* to the hinder part, and is the *greater*. *That* preſently after its going forth of the skull, tends ſtraight downward to the muſcles of the tongue and chops, and to the parts placed in the mouth, upon which it is wholly conſumed.

The leſſer nerve.

The greater nerve, and its propagation.

*This* on the contrary ſends its firſt propagation to the muſcles ſeated on the backſide of the neck, eſpecially to the firſt muſcle of the ſhoulder-blade, called *Cucullaris* or the cowl-muſcle, and then adhering to the ſeventh pair, and the aforeſaid artery and vein, by the benefit of certain membranes, it runs down to the ſides of the throtle, to whoſe muſcles, eſpecially thoſe ſeated in the inner cavity, it diſtributes ſurcles overthwart. Here many propagations of nerves meeting together, and parting aſunder again, a certain texture is made, wherein knots are found not unlike to the glandules, that are tyed to the divarications of the veſſels; which was firſt obſerved by the moſt learned Anatomiſt *Fallopius*, who would have it reſemble the body of an olive. But the greater nerve it ſelf going in the middle betwixt thoſe ſame veſſells which I ſpake of, is carried leiſurely from the throtle to the rough artery, and running down at the ſide thereof, tends to the cheſt.

The branches of the greater nerve.

But before it enters therein to, it is divided over the hollow of the neck into two branches, of which one is the outer and leſſe: the other the inner and greater. We ſhall now ſpeak briefly of the diſtribution and propagations of them, but ſo that being the right trunk is diſſeminated in another manner then the left, we ſet down the hiſtory of each by itſelf; and firſt of the right, then of the left.

The propagations of the outer branch of the right nerve.

*The outer branch* then of the *right* nerve ſends out propagations preſently after the diviſion to the muſcle that bends the head, called *Maſtoideus*, as alſo to that of the bone *hyoides*, called *ſternohyoideus*, and that of the *Larinx* or throtle, called *ſternothyroideus*; after this it enters the cavity of the cheſt, and when it comes to the axillary artery, iſſues forth

1. from its inſide ſometimes three, ſometimes two ſurcles one under another which are returned about the ſaid axillary artery, as it were an axel-tree, or (to ſay trulyer) a kind of pulley, and cloſing together make one nerve; which being

2. faſtned to the right ſide of the rough artery, by the benefit of a membrane, runs back from the lower part thereof to the higheſt, and haſts to the right ſide of the throtle, leaning upon a glandule, which is placed at the root of the right ſide. Having paſt this, it is forthwith divided into mamy ſurcles, which are ſpent upon the muſcles of their own ſide, which are placed in the throtle, and have their heads downward, giving motion to them. And this nerve is called *Recurrens*, the returning one from its progreſſe, and is very famous among all, being ſo made by skilfull nature with great wiſdome, that it might be inſerted into the muſcles of the throtle, whoſe heads look downward, when all the nerves that give motion, ought to be inſerted into the heads, and to look towards the end, not on the contrary. And becauſe the throtle is an organ of the voice, but the voice cannot be uttered without motion of the muſcles, that either open the cartilages of the throtle, or ſhut them; therefore theſe nerves, which impart to the muſcles the power of moving and contracting themſelves, being either bound hard or cut off, it happens for that cauſe, that the voice is taken away. This may be very handſomely ſhewn in dogs, or in a hog, becauſe the one continually makes a noiſe with barking, the other with grunting. For one of theſe nerves being cut off, halfe the voice is taken away; but both being cut, it is wholly loſt. The recurrent propagation being thus conſtituted, the outer branch running down obliquely under the hollow of the neck, after that by the way it hath

The right recurrent nerve.

3. diſtributed ſurcles of an indifferent bigneſſe into the *Pleura*, or membrane of the ribs, and

4. into the coat of the lungs, and given others to the *pericardium* or purſe of the heart, and to

5. the heart it ſelf; it deſcends farther within the duplication of the *mediaſtinum*, and near to the rack-bones is divided into two branches, which make *the right nerve of the left orifice of the ſtomach*, are carried obliquely, and then piercing through the midriffe, together with the gullet, to which for all that they afford never a branch, are conſumed upon the left orifice of the ſtomach, with many branches like a little net, and ſo encompaſſe it together with the left nerve, that it ſeems wholly to conſiſt of nerves. Hence there is ſo great a ſympathy of the ſtomach, not only with the brain, but with the heart alſo; that ſuch diſeaſes, as pain the upper orifice, ſeem to be of the heart, and indeed ſo they are, the ſame heart ſuffering pain, becauſe of this nerve being pained. And this is the true cauſe, to wit, the communion of this nerve, not the nearneſſe of both the entrails, as others ſay. The *inner branch* goes to the inner ſide of the root of the firſt rib of the cheſt, and cleaving to

VVhence the ſympathy is betwixt the ſtomach and heart.

Propagations of the inner branch.

the

the rack-bones under the *Pleura*, runs down through the roots of the reſt of the ribs, taking to it a little branch from every one of the Intercoſtall nerves, that iſſue out of the back-bone, then paſſing through the midriffe with the Deſcendent trunk of the great artery it is carried as far as to the *os ſacrum* or great bone, at the region whereof it iſſues out three propagations, which are diſtributed into the naturall inner parts. *The firſt* goes to the lower membrane of the Kall, and deſcending through it is parted into three little branches, of which *one* is diſtributed to the right ſide of the ſame membrane, and to that part of the colick gut, that is joined unto it: *another* the leaſt of them, and a very ſmall one, to the guts *duodenum*, and the *jejunum* about its beginning; *the third* to the bottom of the ſtomach on the right ſide, and to the upper membrane of the Kall, which is ſomething the larger. That which remains of this propagation is ſpent upon the hollow part of the Liver, and the bladder of gall. *The ſecond* goes into the right kidney, and the membrane thereof. 2. *The third*, which is greater then either of the former, deſcending to the firſt rack-bone of the loins, reaches into the right ſide of the meſentery and into the guts, that are tyed thereto, entring the center of the meſentery in company of an artery, and a vein. 3. The remainder goes into the bladder, and in women into the right ſide of the bottom of the womb. But *the outer* branch of *the left* nerve, ſaving that in its deſcent it has offered ſprigs both to the *Pleura*, or membrane inveſting the ribs, and to the coat of the lungs, and that outwardly, as alſo to the purſe of the heart, and heart itſelf inwardly, at that part of the Deſcendent trunk of the great artery, where it firſt iſſues out of the heart, and is bowed to the back-bone, it ſends forth three ſurcles, which returning to the ſaid artery cloſe together into one nerve, which is called *ſiniſter recurrens nervus*, the left returning nerve, and in like manner as the right one, takes its progreſſe upward, and is propagated into the muſcles of the *Larinx*, or throttle. After this it iſſues out a ſmall ſprig, which is diſtributed through the *baſis* of the heart, and coat of it in manner of hairs. Afterward the remainder deſcends inclining itſelf obliquely to the right, and goes to the upper orifice of the ſtomach, into the right ſide whereof it is diffuſed, as the right branch was before into the left ſide, being divided into many little branches in manner of a net. From this a ſurcle is carried down along the upper part of the ſtomach to the *pylorus*, or lower orifice, which when it hath as it were interwoven with ſome ſprigs, it goes into the hollow of the liver. *The inner* branch firſt of all takes to it propagations from the intercoſtall nerves, and then paſſing through the midriffe is divided into three. *The firſt* of them goes overthwart to the Spleen, and in the way ſhoots out two ſprigs, *one*, which is likewiſe ſent into the lower membrane of the Kall, and part of the colick-gut, which is tyed thereto; *another* into the left ſide of the bottom of the ſtomach, and into the upper membrane of the Kall. *The ſecond* propagation goes into the left ſide of the Meſentery, and the guts of that place; ſometimes alſo it iſſues ſprigs, which run out with the ſeminary veſſels through the proceſſes of the *Peritoneum*, or rim of the belly to the teſticles. *The third* goes to the left Kidney, and the fat membrane thereof. The remainder of the branch paſſes to the left ſide of the bladder, and of the bottom of the womb. The uſe of this pair is manifeſt enough, as being very notorious, when the outer branch beſtows little boughs upon the middle bowels, but the inner upon all thoſe of the loweſt belly, and the right branch upon thoſe of the right ſide, the left on thoſe of the left. Beſides this uſe it conduces by the returning branches alſo to the framing of the voice, by imparting the faculty of motion to the muſcles of the throttle.

The outer branch of the left nerve.

Its propagations.

The left recurrent nerve.

Propagations of the inner branch of the left nerve.

1.

2.

3.

Uſe.

*The ſeventh pair* ariſes in the utmoſt part of the nowl-bone, where the marrow of the brain is ready to goe out of the skull, and ſo is counted the hardeſt of all the nerves, that have their originall within the skull. But it ariſes in ſome roots ſeparated from each other, which joining together on both ſides into one, it goes out of the skull through the fourth and fifth holes of the nowl-bone (which are placed betwixt that greateſt one, which opens a way for the deſcent of the ſpinall marrow, and that, at which the ſixth pair goes out) and preſently after its egreſſe is involved in one common membrane with the ſixth pair; whence ſome, not ſo diligently obſerving it, have beleeved that they were mixt one with another; and thus they deſcend together. When it comes to the root of the tongue, it diſtributes ſurcles into all the muſcles thereof, ſending over ſome alſo to certain muſcles of the bone *hyoides*, and of the throttle, as alſo to thoſe, which take their beginning from the *appendix* called *ſtyloides*. The uſe of this conjugation is to carry down the faculty of ſenſe, & motion from the brain, to the muſcles of the tongue.

The ſeventh pair.

Its originall.

Its uſe.

To theſe ſeven pairs, which are commonly ſo numbred, we adde *an Eighth* which makes the nerves of ſmelling, by which a faculty is derived from the brain of apprehending the odours of things without. Theſe are commonly affirmed to ariſe out of the marrowy ſubſtance of the brain, in the *baſis* thereof, near to the firſt pair; but the new diſſection of the brain, and which is performed by turning it upſide down, hath taught us, that they ariſe at the utmoſt ſides of the brain, in that part, which is above the holes of the ears, whereby it is manifeſt, that hitherto only one half of them hath been ſhewn. They are very ſharp at their originall, and diſtant one from the other, but going forward by degrees

The eighth pair.

Its originall.

grees, betwixt the uppermoſt and middle prominence of the brain, they grow thicker, and draw nearer one to another, and ſo at length they lye down above the *ſinus* or cavities of the ſpongy bone within the skull. Theſe are thruſt into the mammillary proceſſes of the brain: but *Galen* and *Marinus*, (whom almoſt all Anatomiſts have followed) would not call them by the name of Nerves, although they altogether agree therewith in their colour, courſe, and uſe, becauſe they neither have productions like the reſt of the nerves, nor go out of the cavity of the skull: but truly they ſeem to me to commit no other a ſophiſm, then they, who have expelled the teeth out of the number of the bones becauſe they are not inveſted on the outſide with a membrane, as others are, although neither this makes any thing to the eſſence of the bones, nor that to the eſſence of the nerves.

## CHAP. II.

### *Concerning the nerves of the Spinall marrow properly ſo called, and firſt of thoſe of the Rack-bones of the Neck.*

NAture, the wiſe parent of all things, as ſhee hath framed the nerves, that they might ſerve for the carrying of the faculties, and ſpirits, that are generated in the brain, becauſe the brain itſelf could not be diffuſed through the whole body: ſo when the ſame could not conveniently beſtow nerves upon all the parts, by reaſon of their too great diſtance, ſhee made the ſpinall marrow, which is nothing elſe, but the marrow of the after-brain and brain, extended through the long conduit pipe of the rack-bones of the back. And therefore we having already viewed thoſe nerves, which take their originall from the marrow of the brain, whileſt it is yet contained in the skull; it remains now, that we take a view of them alſo, which come from the ſpondyls of the back-bone: But it is called marrow, not that it hath any affinity by reaſon of its ſubſtance with the marrow of the bones; but becauſe like marrow it is contained within the rack-bones; but the ſubſtance thereof is like that of the brain, which itſelf alſo *Plato* called marrow; and it is named the *ſpinall* marrow, or *of the back*, to diſtinguiſh it from both thoſe, that are not contained in the back-bone, but either in the skull, as the brain, or in the hollowneſſe of the bones, as that which is properly called marrow. This ſubſtance is covered with two membranes, no otherwiſe then the brain itſelf is, from whence it takes its originall, the one thick, the other thinner, which are inveſted with a certain third, ſtrong, and membranous covering, that *Galen* thought to be the ligament of the rack-bones. But it was made to that end, that it might diſtribute ſenſe, and motion to the muſcles, aad membranes, to which thoſe pairs of the brain do not reach. Therefore, when there is a good number of nerves ariſing there from, yet we ſhall eaſily reduce them to ſome certain *claſſes*, or companies, if we ſay that they all make up thirty pairs, of which ſeven belong to the marrow, whileſt it is carried through the rack-bones of the neck; twelve, whileſt it is carried through thoſe of the cheſt; five, through thoſe of the loins; and laſtly ſix to that, which is contained in the holes of the *os ſacrum*, or great bone. But theſe nerves go out through the holes of the rack-bones, and either *with a double originall* on the fore and hinder part, as it happens in the two firſt conjugations of the neck, and five of the great bone, which ariſe not from the ſides, that is, from the right, or left part, but iſſue forth two branches before and behind; or elſe *with a ſingle one*, through one hole bored in both ſides of the rack-bones, as happens in all the reſt of the pairs, in which one nerve iſſues from the right ſide, the other from the left. But the firſt, and ſecond pair have a double beginning, leſt if they ſhould ariſe with a ſingle one, that being ſomewhat thicker might have been hurt by the joints of the rack-bones; or if the hole ſhould be made larger, the rack-bone (which was ſmall enough of itſelf) ſhould be liable to breaking. Therefore that both theſe evils might be avoided, the wiſe Opificer made a double beginning, one on the forepart, another on the hinder. But the right branches go every where to the right ſide, the left to the left, and they are diſtributed on both ſides after the ſame manner.

*The firſt pair* therefore [*tab.* 1. *n.* 1.] ariſes *with its firſt, and foremoſt propagation* [*tab.* 1. B] from the forepart of the ſpinall marrow, and paſſes out betwixt the nowl-bone, and the firſt rack bone of the neck, near to the ſides of that round ligament, wherewith the tooth-like proceſſe of the ſecond rack-bone is tyed to the foreſide of the nowl-bone, and ſo it is diſtributed into the muſcles over the neck, and under the gullet, that bend the neck. *With the other, and hinder propagation*, [*tab.* 2. *Fig.* 1. *C.*] it likewiſe falls out through the hole, that is common to the nowl-bone, and firſt rack-bone of the neck, toward the hinder part, but with a double ſprig, one of which being ſmall is ſpent upon the leſſer ſtrait muſcles, and the upper oblique ones, that extend the head; the other reaches out into the beginning of the muſcle, which lifts up the ſhoulder-blade.

The ſpinall marrow.

Why it is called marrow.

It is wrapt up in two membranes.

The conjugations or pairs of the ſpinall marrow.

The firſt pair of the neck.

*The second pair* [*tab.* 1. 2.] *with its fore-branch* [*tab.* 1. D,] (which is slender, then the hinder one, though both of them seem small enough) arising from the fore-part of the marrow goes forth betwixt the first, and second rack-bones at the side of the tooth-like processe, which branch is distributed into the muscles, that lie upon the neck, as well as the fore-branch of the first pair, which is wrapped together with it; and is almost wholly spent upon the skin of the face. *With its hinder branch* [*tab.* 2. *Fig.* 1. E.] it slips out through the sides of the backward processe of the second rack-bone, but presently is cleft into two branches of unequall bigneſſe, of which *that which is the thicker* [*tab.* 2. *fi.* 1. F.] tends from the forepart to the hinder, where the muscles seated on both sides of the hinder part of the neck do meet together, & there being mixt [*t.* 2. *f.* 1. G] with the third propagation of the third pair of the nerves, it runs out through the middle of the said muscles, returning from the hinder to the foreparts, and so is distributed into all the skin of the head, as far as to the top of the crown, [*t.* 2. *f.* 1. H] as also to the ears. *The other branch, which is the slenderer*, is inserted into the greater straight muscles, and the lower oblique ones, that extend the head. *Galen* makes mention of these branches *lib.* 4. *de locis affect.* which place we shall not think much to transcribe hither, it making very much to the illustration of the use of this kind of learning. Not long since, sayes he, they ulcerated the head of a certain man, by laying on medicins vehemently heating, thinking by this means his sense, that was greatly impaired, might be recovered. But we cured this very man, having found out the seat of the disease as well from other accidents, as from the primitive, or procatarctick causes. For we diligently examined him about every one of them, and found that this was one; when he had walked in much rain caused by a violent wind, his cloak was wet about his neck, so that he felt himself affected with a vehement cold in that part: so then if you know, that four nerves ascend from the first racks of the back-bone to the head, from which the skin about it receives its sense, you will easily find out the seat of the disease, that therefore being healed, the skin of the head was healed also, as having no primary disease. The second pair.

*The third pair* [*tab.* 1. 3.] issues out of the common hole in the sides, which is betwixt the second and third rack-bones, and presently after it gets out, is cleft into two branches, of which the *more forward* one [*tab.* 1. I.] is subdivided into four propagations. *The first* [*t.* 2. K] goes to the first bending muscle of the neck, or the long one: *the second* [*t.* 1. L.] runs down, and being united with a sprig of the fourth pair [*tab.* 1. Q] ends in the muscles, that lye under the gullet. *The third* [*tab.* 1. M.] climbs up, and joining with the thicker branch of the second pair but now mentioned [*tab.* 2. *f.* 1. F] is spent upon the skin of the hinder part of the head. *The fourth* [*tab.* 1. N] is imparted to the transverse muscles, or to the first pair of the extenders of the neck, and to that, which lifts up the shoulder-blade, of which two muscles that ends in the transverse processes of the neck, this begins therein; and at length it is digested into the square muscle, that draws down the cheeks, which is called by *Galen* πλατυσμαμυοειδὴς. *The hinder branch* [*tab.* 2. *f.* 1. O] is implanted into the second pair of muscles, that extend the chest. The third pair. Its fore-branch. Its hinder branch.

*The fourth pair* [*tab.* 1. *numb.* 4.] issues out of the common hole of the third, and fourth rack-bones, and like the third pair is divided into two unequall branches. *The more forward and greater* [*tab.* 1. P] is cleft into three other twigs, of which *the first* [*tab.* 1. Q] is joined with another branch of the third pair [*tab.* 1. L] and goes to the first long pair of muscles, that bend the neck. *Another* [*tab.* 1. R] goes to the transverse muscle, or first of those, which extend the neck, and to the first of the shoulder-blade, called *Cucullaris*, the cowl-muscle. *The third* [*tab.* 1. S] being smaller then the other, and joyned with a surcle of the fifth pair, and another branch of the fixth pair, near to the *mediastinum* or membrane that parts the chest in the middle, and above the *Pericardium*, passes on downward, that out of these three principles the nerve of the midriffe may be made up. *The hinder branch* [*tab.* 2. *f.* 1, T] goes toward the spine or ridge, under the muscles, which are placed thereabout, to which also it affords a good number of branches, and from thence being led downward between the muscles on both sides of the neck, it is carried to the square muscle, that draws down the cheeks. In this place it is worth our labour to inquire what may be the reason, that they who are troubled with a Resolution, or deprivation of motion in the whole body, have nevertheless the motion of their midriffe for a while free: some make answer, that this happens, because although no spirits are sent over from the brain, yet they may be diffused out of the marrow of the back. But these men beg the question, when we suppose, that no spirits come from hence, because we see that all the muscles of the whole body, to which nerves are sent from the marrow of the back, are resolved or deprived of motion. Therefore I thought fit to seek out for another answer, and to say that the midriffe has two motions, one, that is voluntary, which we use, whilst we breath strongly; another naturall one, when the fibres are extended, and contracted of themselves. A man therefore is preserved by this naturall motion, when we see that breathing is little, and weak, and as much as suffices, that the lungs may be moved a little. The fourth pair. The fore-branch. Its propagations. 1. 2. 3. The hinder branch. A question.

*The fifth pair* [*tab.* 1. *numb.* 5] goes out betwixt the fourth and fifth rack-bones, and, like the two last fore-going, is cleft into two branches. *The forwarder* of them [*tab.* 1. U] issues forth The fifth nerve. Its fore-branch.

forth ſome propagations. *The firſt* [*tab.*1. betwixt U and 6] goes to the muſcles, that bend the neck. *Another* [*tab.*1. X] together with propagations of the fourth, and ſixth pairs, ſometimes alſo of the ſeventh, to wit, then when the branch of the fourth is wanting, deſcends near to the ſide of the gullet through the forepart of the rack-bones of the neck, and is implanted into the midriffe, & ſo makes the midriffe nerve. *The third* [*t.*1 Y] is carried through the upper part, and outſide of the arm, to the ſecond muſcle of the arm, to wit, that which lifts it up, called *Deltoides*, from whence little branches are ſent over to the firſt, and ſecond, that is to the cowl-muſcle, & the lifter up of the ſhoulder-blade. *The fourth* propagation [*tab.* 1.b] at the neck of the ſhoulder-blade is cleft into two, of which *the former* [*tab.*1.c] goes into the muſcle *Deltoides*, at that part where it ariſes from the clavicles or canal-bone: *the latter* and thicker [*tab.*1.d] is inſerted into the fourth pair of muſcles of the bone *hyoides*, called *coracohyoideum*, and from thence imparts a ſmall branch to the upper muſcle over the ſhoulder-blade called *ſuperſcapularis*, and to the muſcle *Deltoides*, where it ariſes from the ſpine of the ſhoulder-blade. *The hinder branch* [*tab.*2.*f.*1.e] is writhen toward the back-bone, and diſtributed in the ſame manner, as the hinder branch of the fourth pair is.

The hinder branch.

*The ſixth pair* [*tab.*1.*numb.*6] goes out under the fifth rack-bone, and in like manner as the other pairs are, is divided into two branches. *The forwarder and greater* [*tab.*1. f] after it has propagated that ſprig, [*tab.*1.g] which we ſaid is joined with the fourth, and fifth pair, [*tab.*1.S and X] to the making up of the nerve of the midriffe [*tab.*1.i] paſſing on farther is united with the two next following pairs, the ſeventh of the neck, and the firſt of the cheſt, and is again ſeparated from them, and then again being joined with them it ſo weaves a certain net-like texture, from which nerves are iſſued forth, that go to the arm. *The hinder* [*tab.*2.*fig.*1. l] is carried to the hind muſcles, which extend the head, and neck.

The ſixth pair. Its fore-branch. Its hinder branch.

*The ſeventh pair* [*tab.*1.*n.* 7] is derived from the marrow of the neck, and iſſues forth through the common hole of the ſixth, and ſeventh rack-bones. *The forwarder, and greater* branch thereof [*tab.*1.m] is joined preſently after its egreſſe with the ſixth nerve of the neck, and the firſt of the cheſt, and for the greater part is carried with the reſt to the arm. *The hinder and leſſer branch* [*tab.*2.*fig.*1.n] goes to the muſcles, that lye upon the neck, and to the ſquare one, that draws down the cheeks.

The ſeventh pair. The fore-branch. The hinder.

## CHAP. III.

### *Concerning the Nerves of the marrow of the rack-bones of the Cheſt.*

TWelve conjugations of nerves iſſue forth from the ſpinall marrow, whilſt it runs through the rack-bones of the back, as the moſt learned *Veſalius* has rightly opinioned, however there are but eleven holes bored in the twelve rack-bones thereof, as *Columbus* objected, becauſe the firſt pair paſſes out between the laſt rack-bone of the neck, and the firſt of the back, wherefore it ought to be numbred rather among the pairs of the cheſt, then thoſe of the neck. All theſe conjugations after their egreſſe are divided in two; and the one branch which is the greater, alwayes bends forward; the other which is the leſſe is bent to the hinder parts, and to the muſcles, that lye upon the back.

The firſt Pair.

*The firſt pair then* [*tab.* 1. *numb.* 8] of the nerves, which iſſue forth from the marrow of the cheſt, goes out of the common hole of the ſeventh rack bone of the neck, and the firſt of the cheſt, in the ſame manner, as the five pairs laſt mentioned do, and in like ſort alſo is forthwith divided into two branches. The *forwarder*, and greater [*tab.* 1. o] is united, [*tab.* 1. p] partly with the ſeventh nerve of the neck, partly with the ſecond of the cheſt, in that manner, which we have before explained; and ſo afterward is wholly conſumed upon the arms, excepting one propagation [*tab.* 1. q] which ariſing at the beginning of it, is joined with the ſaid nerves, and runs into the foreparts, near the length of the firſt rib of the cheſt, to the breaſt bone, beſtowing a ſprig upon the ſubclavian muſcle, after that being reflected upward it is ſpent upon the muſcles, which take their originall from the top of the breſt-bone: ſuch are the muſcle, that bends the head called *Maſtoideus*; that which draws down the bone *hyoides*, or *ſternohyoideus*; and the firſt of them which extend the buckler-like griſtle of the throttle, called *thyroides*, or the muſcle *ſternothyroideus*. But to the two laſt ſometimes branches are ſent over from the ſixt conjugation of the brain, and the third of the cheſt. The ſame branch alſo when it has paſt the arm-pit, being ready to go to the arm, iſſues forth a certain other propagation from its hinder part, which goes to the muſcles ſeated in the hollowneſſe of the ſhoulder-blade. *The hinder and leſſe* branch [*ta.* 2. *fig.* 1. r] lies hid under the muſcles, which grow to the rack-bones, and imparts ſome propagations to the ſecond bending muſcle of the neck, and to them which extend the head and neck; but when it has attained to the ſpine of the ſeventh rack-bone, it goes overthwart to the lower ſide, and diſtributes ſurcles into the firſt muſcle of the ſhoulder-blade, or that like a Monk's cowl, and into the third of the ſame, called *Rhomboides*, as alſo into the upper of the hindmoſt ſaw-muſcles.

Its fore-branch

Its hinder branch.

*The*

*The ſecond pair* [ *ta.* 1. *num.* 9. ] breaks out betwixt the firſt and ſecond rack-bones of the cheſt, and is cleft likewiſe into two branches. *The forwarder* [ *t.* 1. s. ] is united with the firſt pair of the cheſt; and thus the firſt and ſecond pairs of the cheſt are united by turns, with the fifth, ſixth, and ſeventh of the neck, that the one are not diſcerned from the other; but make a net not unlike to thoſe ſtrings which hang at Cardinals hats; from which afterward all the nerves that go to the arms, iſſue forth, and take their originall. This ſpreads out a branch [ *t.* 1. t ] which goes forward through the firſt diſtance betwixt the ribs, according to the courſe of the firſt rib, as far as to the breaſt-bone, making the firſt Intercoſtall nerve, from which ſurcles [ *t* 1. u ] are diſtributed into the muſcles that lie upon the cheſt. *The hinder* branch [ *t.* 2. *f.* 1. x ] has the ſame diſſemination with that of the foregoing pair. The ſecond Pair. The fore-branch. The hinder one.

*The other ten pairs* [ *tab.* 1. *numb.* 10, 11, 12. and ſo on to 19 incluſively ] of the nerves of the cheſt, obſerve the ſame manner both of their riſe, and diſtribution. For they all iſſue out of the common holes of the rack-bones at the ſides, and preſently after their egreſſe are cleft into two branches of unequal bigneſſe, one of which is the forwarder and greater; the other, the inner and leſſe. *The forward* branches [ *ta.* 1. *y.* ] ( which make the nerves between the ribs ) are carried into the fore-ſide, and each of them affords a little branch in order according to its length, to the inner branch of the ſixth pair, which deſcends under the *pleura* to the roots of the ribs. Theſe branches are joined with the Intercoſtall veins and arteries; together with which they paſſe along the rib to the forepart through the *ſinus* or chanel, which is cut out on the lower and inſide of the ribs. But they which belong to the true ribs, go on as far as to the breaſt-bone; but they which belong to the baſtard ones, are carried into the forepart of the *abdomen* above the *peritonæum* or rim of the belly. From theſe nerves many branches are diſſeminated into the muſcles between the ribs, not only in the inner, but the outer ones alſo, as wel as into the other, [ *ta.* 1. *z* ] which lye upon the cheſt; ſuch as are the fourth, and fifth muſcles of the ſhoulder-blade or the two formoſt ſaw-muſcles, as alſo the broad one, called *Latiſſimus* [ *tab.* 1. *β* ] that moves the arm backward from the breaſt. In like manner a propagation goes from the fifth Intercoſtall nerve, about the middle of the rib, paſſing through the Intercoſtall muſcle, into the firſt pair of the muſcles of the *abdomen*, [ *ta.* 1. *α* ] as alſo into the skin of the cheſt; and being divided in four parts is diſtributed into the pectorall muſcle that moves the arm forward to the breaſt, and alſo into the skin, from which ſome ſprigs doe afterward goe to the nipples of the breaſt [ *ta.* 1. *γ* ] and impart to them a very ſharp ſenſe. *The hinder branches* [ *ta.* 2. *fi.* 1. *δ* ] goe backward to the ſpine, or ridge, between the muſcles going to the rack-bones, which have the charge of extending the cheſt. Yet are they not wholly ſpent upon theſe muſcles, but when they have now attained to the tops of the ſpines, they fall out between the muſcles of both ſides, whereabout they are joined to one another, and ſo afterward they give nerves to all the muſcles, which ariſe out of the tops of the ſpines of the rack-bones. Such are the firſt extending muſcle of the head, called *Triangularis*, or *Spleneus*; the third muſcle of the ſhoulder-blade, or *Rhomboides*; the firſt of the ſhoulder-blade, or *Cucullaris*; the third broad muſcle that leads the arm away from the breaſt, called *Aniſcalptor*, and the hinder ſaw-muſcle. A good number alſo of ſurcles are diſtributed into the skin of the back. The other ten pairs. Their fore-branches. Their hinder branches.

## CHAP. IV.

### *Concerning the nerves of the marrow of the rack-bones of the loins.*

FRom the ſpinall marrow, whilſt it is carried through the loins, although there be only four holes, yet five pairs iſſue forth, the firſt being between the laſt rack-bone of the cheſt, and the firſt loins. But they go forth through the common holes, and being gone forth, are diſtributed in like manner as we have ſaid of the nerves of the cheſt; when from every one of them, preſently after its gong out, one branch, and that the greater, ſpreads it ſelfe forward, the other, and leſſe backward. *The formoſt* branches run to the muſcles of the *abdomen*, or outer, and forepart of the loweſt belly; the *hindmoſt* to them, which lie upon the ſpines of the rack-bones, and the bones without a name, from whence they impart ſome little branches alſo to the skin that covers the loyns. But the fore-branches are knit together, the firſt with the ſecond, the ſecond with the third, the third with the fourth, aud the fourth with the fifth in the ſame faſhion, as we ſaid the nerves of the arm were, whilſt they make the net-like complication.

*The firſt pair* then, [ *ta.num.* 1. 20. ] as the reſt do alſo; going out under the *peritonæum*, or rim of the belly, through the common hole of the rack-bones, which is betwixt the laſt rack-bone of the cheſt, and the firſt of the loins; preſently after its egreſſe is cleft into two branches. *The fore-branch*, which is greater, goes into the fleſhy parts of the midriffe, and into the beginning of the firſt bending muſcle of the thigh, called ψοας. The firſt paire. Its fore-branch

The hinder one.

From this nerve a certain ſurcle [*ta.* 1. 39.] takes its beginning, reaching out for the moſt part with the preparing artery to the teſticle. *The hinder branch* [*ta.* 2. *fig.* 1. *nu.* 42.] ſends propagations into the muſcles that lie upon the backſide of the rack-bones of the loins, ſuch as are the firſt and third of them which extend the cheſt, that being called *Dorſi longiſſimus*, this *ſacrolumbus*; as alſo the muſcle which extend the loins: but when they iſſue out from the tops of the ſpines, wherabout the ſaid muſcles are joined one to another, they run to the ſides, and are implanted into the broad muſcle, that leads the arm outward from the breaſt, called *Latiſſimus*.

The ſecond.

*The ſecond pair* [*t.* 1. *n.* 21.] goes out under the firſt bending muſcle of the thigh, called *Pſoas*, betwixt the firſt and ſecond rack-bones of the loins. *The fore-branch* thereof is diſtributed to the ſecond bending muſcle of the thigh, that fills up the cavity of *os Ilium*, or the hanch-bone, and the firſt bending one of the leg, called *Faſcialis*, as alſo to the skin of the thigh. *The hinder branch* going out of the *abdomen* is diſtributed to the three muſcles that extend the thigh, or the *Glutæi*; and to that which extends the leg, called *Membranoſus*, the membranous muſcle.

The third.

*The third pair* [*t.* 1. *n.* 22.] iſſues forth likewiſe under the firſt bending muſcle of the thigh, betwixt the ſecond and third rack-bones. *The fore-branch* thereof paſſes over near to the hanch bones, diſtributing two propagations; *one* which goes to the knee, and its skin; *another* [*t.* 1. 51.] which accompanies the vein of the inner ancle, called *ſaphena*. *The hinder branch* is reflected and diſſeminated into the muſcles which lie upon the loins.

The fourth.

*The fourth pair* [*t.* 1. *n.* 23.] is the greateſt of all the nerves of the loins, and being carried under the ſaid muſcle that bends the thigh, as alſo under the *os pubis*, or ſhare-bone, accompanies the Crurall vein and artery.

The fifth.

*The fifth* and laſt pair [*t.* 1. *n.* 24.] iſſues out betwixt the fourth and fifth rack-bones; *the fore-branch* whereof paſſes through the hole which is betwixt the hip-bone, the *os pubis*, or ſhare-bone, and the *os Ilium* or hanch-bone, and diſtributes ſome propagations to the two muſcles that turn the thigh about, called *Obturatores*, others to the ſecond and third bending ones of the thigh, and others to the muſcles of the yard. *The hinder branch* goes into the muſcles, and skin upon the rack-bones.

## CHAP. V.

### *Concerning the nerves of the marrow of* os ſacrum *or the great bone.*

The firſt paire.

LAſt of all from the marrow which is contained in the rack-bones of the *os ſacrum*, the ſix laſt pairs of the nerves of the ſpinall marrow do iſſue forth. *The firſt* of theſe [*t.* 1. *n.* 25.] goes out betwixt the laſt rack-bone of the loins, and the firſt of the great or holy bone, in the very ſame manner as the reſt, that ariſe out of the rack-bones of the loins, and likewiſe after the ſame ſort is divided into two branches. *The fore-branch* although it be mixed with the crurall nerves, ſends yet a ſurcle [*t.* 1. 43.] over near to the inner region of *os Ilium*, and is diſperſed into the muſcles of the *abdomen*, and into the ſecond bending one of the thigh. *The hinder* [*t.* 2. *f.* 1. *n.* 44.] is diſſeminated into the muſcles that ariſe from the *os Ilium* or hanch-bone, and eſpecially into the firſt of them, that extend the thigh, or the greater *Glutæus*, as alſo into the skin of the buttocks.

The other five pairs.

*The other five pairs* have ſomething proper to themſelves; ſo that before they go out of the bone, they are every of them double on each ſide, and ſo from every one of them a double branch is carried on each ſide, one to the forepart, another to the hinder The three uppermoſt of the fore-branches, as that of the firſt pair alſo, go to the *Crus*, or parts of the body below the buttocks: the two loweſt go into the muſcles of the fundament and bladder; and in women to the neck of the womb, in men to the yard; but in both ſexes to the outer privy parts. The hinder branches are diſtributed to the muſcles ſeated on the backſide of the bones *Ilium*, and *ſacrum*. Of this ſort are the firſt and third extending muſcles of the cheſt, or *Dorſi longiſſimus*, the long muſcle of the back, and *ſacrolumbus*, that which bends the loins, called *ſacer*, and the broad muſcle that leads the arm away from the breaſt; as alſo the three which extend the thigh, being the authors of the buttocks, and therefore called *glutæi* the buttock-muſcles. And this is the utmoſt end of the ſpinall marrow, which reaching into the rump-bone, called *os coccygis* is in this manner terminated: And this is the hiſtory of the thirty pairs of the nerves which go out of the ſpinall marrow, which is diligently and accurately to be committed to the memory, that we may know to what place remedies ought to be applyed, if at any time from ſome externall cauſe, as by a fall from aloft, or a bruiſe, or ſome notable compreſſion, any part ſhall have loſt either motion, or ſenſe, or both. For the remedies muſt be applyed alwaies to the beginning of that nerve, not to the place, in which the ſymptome is perceived.

CHAP.

## CHAP. VI.

### *Concerning the Nerves which are distributed through the Arms.*

THose nerves being now enumerated, which are dispersed through the muscles of the three bellyes, and the parts contained in them; it remains that we describe those also, which are propagated through the *artus*, or extream parts of the body. Here we meet with them first, which are distributed through the arms, whereof there are six pairs commonly set down by Anatomists arising from the fifth, sixth, and seventh pair of the nerves, that come out of the marrow of the neck, and from the first, and second of those, which issue out of the chest. These nerves go out through the common holes of the rack-bones, on both sides, and presently after their going out are united one among another with their forwarder, and greater branches, by and by are separated one from another again, and joined again, and finally separated, so that they seem to make out a certain net-like texture, which cannot be better likened then to those strings of Cardinals hats. This implication of nerves goes forth under the clavicle, or coller-bone, about that place, where the axillary veins and arteries go out of the hollow of the chest, and from this all the nerves of the arm take their originall. But their rise is very uncertain by reason of their being so knit together, wherefore wee in our relation of them will rather follow the footsteps of other men, then our own observations, lest wee should seem to affect new opinions rashly, and without necessity.

*The first nerve* then [*tab.* 1. e] which is carried to the arm, is a double propagation, namely the third, and fourth of the fore branch of the fifth pair of the neck. For *the one* branch [*tab.* 1. Y] is carried to the second muscle of the upper part of the arm called *Deltoides*, and to the skin that lies upon it: *the other* [*tab.* 1. b] goes toward the neck of the shoulder-blade, where it is cleft into two branches; *the former* of which [*tab.* 1. c] goes into the muscle *Deltoides*, where it arises from the collar-bone; *the latter* [*tab.* 1. d] is inserted into the fourth pair of the muscles of the bone *hyoides* called *coracohyoideum*, and from thence affords a little branch to the upper superscapular muscle, and the *Deltoides*, at what place it arises from the spine of the shoulder-blade. *This* nerve runs out through the higher side of the arm; but *the other five* are carried through the arm-pit into the arm, and in the same are scattered into more branches. The first nerve of the arm.

*The second nerve* [*tab.* 1. ζ] is thicker, and takes it originall from that net-like complication, of which we spake, yet, from what nerve cannot be evident enough. This is carried down through the middle, and fore-part of the arm; into which it enters under the first bender of the cubit, or the double-headed muscle, at that part, where its two heads are united one with the other, and where the tendons are inserted both of the pectorall muscle, that leads the arm forward to the breast, and of the *Deltoides*, that lifts it up. Being hid then under this muscle it sends forth two propagations [*tab.* 1. η] one of each side, which enters into the two heads of the muscle *biceps*; and after that about the middle of the length of the upper part of the arm, going under the same double-headed muscle, it shoots forth another sprig [*tab.* 1. †] by means whereof it is joined with the third nerve; and from thence descending it distributes in its progresse a surcle [*tab.* 1. θ] from its outside to the head of the longer of the two muscles of the *radius* or wand, that turns the palm of the hand downward. When it is now come to the bending of the cubit, being led to the fleshy membrane, near to the outside of the tendon of the said double-headed muscle, it is distributed into the skin, being divided into two branches, of which one is the outer, the other the inner; that is the slenderer, this the thicker. *The outer* then [*tab.* 1. ι] being carried down a good way with a branch of the Cephalick-vein through the inside of the cubit, is distributed [*tab.* 1. λ] to the second bone of the thumb. *The inner* branch [*tab.* 1. κ] is subdivided under the common vein of the arm, or the middle one, called *Mediana*, into two branches, *the outer* whereof [*tab.* 1.] going on obliquely under the skin leaving the vein goes away toward the *radius* as far as to the wrest: but *the inner* [*tab.* 1. ν] being fastened to the inner branch of the Cephalick-vein, when it goes more obliquely, in the region of the cubit is cleft into two speciall branches, of which *one* [*tab.* 1 π] is distributed through the region of the lesser bone of the cubit, *the other* [*tab.* 1. ο] through the region of the greater bone to the wrist, and from thence, that being past, into the skin of the inside of the hand. The second. Its progresse. Its propagations. Its branches. The outer. The inner.

*The third nerve* of the arm [*tab.* 1. ρ] or the third, which is carried to the arm, lies next under the second, and in like manner with it arises from that net-like texture. This nerve, whilst it passes through the arm-pit, before it has yet attained to the arm, brings The third.

forth a propagation, [*tab.* 1, σ] which is diſperſed under the skin betwixt the Pectorall muſcle, that leads the arm to the breaſt, and the muſcle *Deltoides*, that lifts up the ſame. But when it hath firſt attained to the arm, it hides itſelf under the muſcle *Biceps*, or firſt bender of the cubit, and paſſing on downward together with the ſecond nerve, it ſends out a little branch [*tab.* 1. τ] into the head of the ſecond bending muſcle of the cubit. After this deſcending it receives a branch [*tab.* 1. υ] from the ſecond nerve, by means whereof they are joined one with the other; and then it goes farther through the forepart of the arm unto the bending of the cubit, being alwayes equally diſtant from the ſecond nerve, and is carried into the protuberation of the inſide of the arm, and the fore-part thereof. When it hath paſt this, it iſſues forth many propagations, [*tab.* 1. φ] which together with the branches, that are derived from the fifth nerve, which is carried through the hinder region of the ſame protuberation, are diſtributed into the muſcles, that are ſeated on the inſide of the cubit, and ariſe from the inner protuberation of the arm: ſuch are the two, that bend the uttermoſt bones of the fore-fingers, and that, which bends the third joint of the thumb. After this it ſends out another propagation, which is carried down between the ſaid muſcles through the *radius* together with a vein, and artery, to the wriſt, and paſſing through under the the tranſverſe ligament, ſcatters ſome ſmall ſprigs into the muſcle, that moves the thumb outward from the fingers, and the two, that bend the firſt joint of the ſame. After this when it is come to the palm of the hand, it is divided [*tab.* 1. χ] into three branches; the firſt of which ſcatters two twigs into the thumb, the ſecond as many into the fore-finger, the third ſends one to the middle finger on the inſide.

The fourth. *The fourth nerve* [*tab.* 2. *fig.* 1. ↓] is the biggeſt of all them, which are carried to the arm, as being almoſt thrice thicker then the reſt. This ariſes, as well as the other, from the net-like complication, and from thence is carried down through the arm, in like manner as the third is, lying deep every where among the muſcles, having the baſilick-vein, and axillary artery for its companions. But preſently after it hath entred the arm, it derives many, but ſmall ſprigs [*tab.* 2. *fig.* ω] into the heads of the muſcles, that extend the cubit; and before it is come to half the length of the upper part of the arm, it is contorted obliquely downward to the bone thereof, and paſſes on betwixt that, and the muſcles, which extend the cubit. But before it be wholly reflected, it ſends forth a ſurcle [*tab.* 2. *fig.* 1. Γ] from its inſide, which goes betwixt the ſaid muſcles, as alſo the ſecond of them, that bend the cubit, and is ſpent upon the skin, that clothes the inſide of the arm, ſome fibres being propagated upward, and downward. Having diſſeminated this propagation it goes by degrees through the hinder part to the outſide of the arm, being carried through the cavity of the outer protuberation of the upper bone of the arm, that is cut out in the back-ſide thereof, where likewiſe it ſends out a ſurcle, [*tab.* 2. *fig.* 1. Δ] going to the skin, that covers the lower part of the outſide of the arm; and then another [*tab.* 2. *fig.* 1 Θ] which is diſtributed into the skin, as far as to the wriſt. After that near to the joint of the cubit it is divided into two branches, an outer, and an inner one, which being hid deep, and among the muſcles, as the whole trunk alſo, deſcend to the wriſt.

Its propagations.

Its two branches.

The outer. *The outer branch* [*tab.* 2. *fig.* 1. Λ] goes along the *radius*, or wand, and when it is come to the wriſt, paſſes through the tranſverſe ligament, on the outer part, and by and by is ſubdivided [*tab.* 2. *fig.* 1. Ξ] into two branches, of which *one* goes with a double ſprig into the outſide of the thumb, the *other* is ſpent partly upon the fore-finger, partly on the middle one.

The inner. But *the inner branch* [*t* 2. *fi.* 1. Π] reaching along the cubit ſcatters more propagations, the *firſt* [*tab.* 2. *fig.* 1. Σ] into the firſt muſcle that extends the fingers, the *ſecond* [*ta.* 2. *fig.* 1. Φ] into the ſecond, that extends the fingers; the *third* [*t.* 2. *fi.* 1. Ψ] into the inner muſcle, that extends the wriſt. But in its progreſſe [*t.* 2. *fi.* 1. Ω] it affords propagations to the three beginnings of the muſcles, that take their original from the *ulna*, or greater bone of the cubit. The remainder of it ends in the wriſt, [*tab.* 2. *fig.* 1. 31].

The fifth nerve *The fifth nerve* [*tab.* 1. *numb.* 32] ariſing lower then any of the fore-mentioned, out of ſame net-like complication, and being joined to the fourth, deſcends through the inſide of the arm, between the muſcles, that bend, and extend the cubit. This ſcatters no propagation from itſelf, but remains intire, till it be come to the inner protuberation of the arm, at whoſe hinder cavity it is reflected, and is diſtributed afterward in the ſame manner with the third nerve, which paſſes through the foreſide of the ſame protuberation. For both of them beſtow propagations [*tab.* 1. 33] upon the muſcles, which grow out of the inner protuberation of the arm, and keep the inſide of the cubit. It iſſues forth a propagation alſo [*tab.* 1. 34.] which being carried through the *radius*, or wand; goes between the muſcles, which bend the ſecond, and third joints of the fingers, and ſo to the palm of the hand, & ſends out *the firſt branch*, which being parted in two is implanted into the inſide of the little finger; then *another*, which being alſo cut in two goes into the ring-finger, and at laſt *another* that goes to the outer part of the inſide of the middle finger. But from this ſame fifth nerve, and from the outſide near to the middle of the length of the *radius*, or wand, there grows out a certain other ſurcle, [*t.* 1. 35.] which being divided into three branches is diſſeminated into the outer part of the middle, the ring-finger, and the little one.

*The*

*The sixth nerve* [*tab.* 1. *numb.* 36,] issues out of the lowest part of the net-like complication, and going through the arm-pit, and inside of the upper part of the arm, & of the cubit, under the skin it makes hast to the inner protuberation of the upper-bone of the arm, dispersing many surcles in its way to the neighbouring skin. [*t.* 1. 37. 37.] But as soon as it has attained to this protuberation, it is cleft into many propagations, some of which lie under the branches of the basilick vein, some lie over, and so being carried under the skin, when they are come down to the wrist, they end [*ta.* 1. 38.] The sixth.

## CHAP. VIII.

### *Of the nerves that are distributed through the* Crura, *or thighs, legs, and feet.*

THere are four pairs of nerves, which are propagated through the *Crura*. They arise from the three lower conjugations of the loins, and the four upper ones of the *Os sacrum*, or great bone, which after they are gone through forth the common holes of the rack-bones, as wel as the nerves, which are distributed through the arm, make a certain complication like the meishing of a net, but far greater then that other. Nor are these nerves of equall bigness, but the first [*ta.* 1. *n.* 46.] and the third [*ta.* 1. 56.] are small, wherefore also they reach but to the thigh; the second [*t.* 1. 50.] is somewhat thicker, and reaches to the leg; but the fourth [*t.* 1. 61.] alone is thicker then the three other put together; and is carried down as far as to the utmost ends of the toes.

*The first nerve* then [*ta.* 1. 46.] growes out of the higher part of the net-like complication, where the third nerve of the loins is joined with the fourth [*ta.* 1. 47. But it is presently carried downward under the rim of the belly, to the thigh; lying upon the outside of the tendon of the first bending muscle of the thigh, to which when it is come, it sends out a propagation [*ta.* 1. 48.] which runs out through the skin on the forepart of the thigh, as far as to the joint of the knee, and there ends, and offers surcles [*ta.* 1. 49.] to the first bending muscle of the leg, as also to the second and third, that extend the same. The first nerve.

*The second nerve* [*t.* 1. 50.] arises out of the same complication, and below the first, over against the connexion of the third and fourth rack-bones of the loins. This together with the crurall vein, and artery, (which are the outer Iliacall branches) descends through the groin into the thigh, which when it has attained to, presently it issues forth a notable propagation [*ta.* 1. 51.] from its inside, lying upon the *saphena* or vein of the inner ankle, on the forepart, all the way it goes under the skin through the inner parts of the *crus* to the great toe. But as the vein *saphena* it self distributes some sprigs in the way to the skin next to it, so also this nerve sends out many propagations, of which that is the chief [*t.* 1. 53.] which it gives to the forside of the knee. But the trunk it self [*t.* 1. 54.] when it has sent out this propagation, passes together with the trunk of the crurall vein and artery into the thigh, and is scattered into the muscles seated on the inside of the thigh, especially [*t.* 1. 55.] into the third bending one of the thigh, and the fourth extending one of the leg, and so afterward it is terminated above the knee. The second. The progresse of the trunk.

*The third* [*t.* 1. *n.* 56.] grows out of the complication, under the second, over against the conjunction of the fourth and fifth rack-bones of the loins. This nerve being carried down upon the second bending muscle of the thigh, called *Iliacus internus*, passes through the hole of the share-bone, and affords propagations [*t.* 1, 57.] to the two muscles, that turn the thigh about, which they cal *Obturatores*, the stoppers, to wit, of that said hole, as also to the two muscles that erect the yard, which arise out of the bone of the hip. From thence like the two foregoing nerves, it descends, and distributes little nerves into the skin, that clothes the inner part of the thigh [*t.* 1. 58.] The remaining part [*t.* 1. 57.] lies deep, the chief propagation whereof [*t.* 1. 60.] is spent partly on the second, partly on the third muscle that bend the leg. The third.

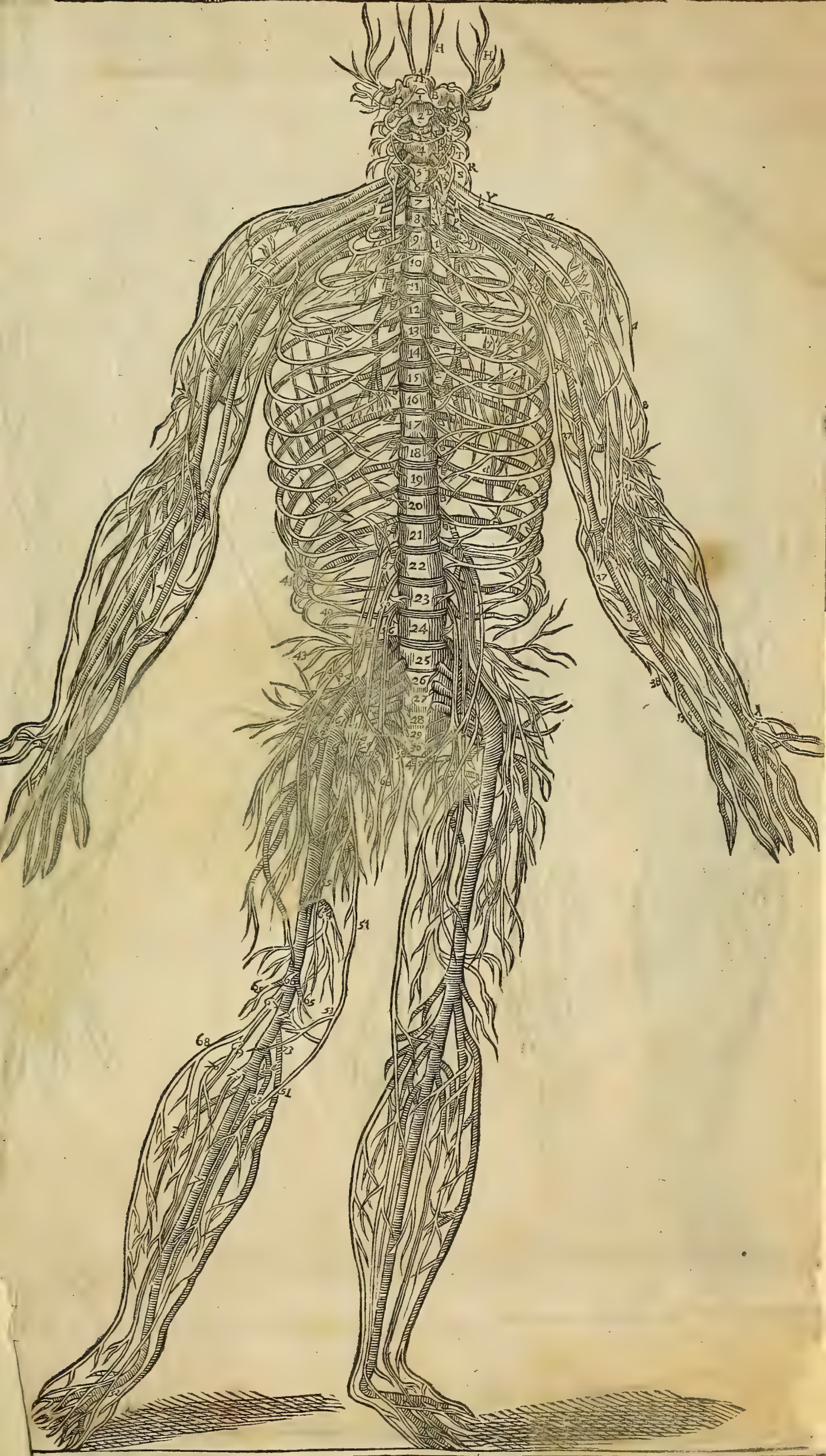
*The fourth nerve* [*t.* 1. *n.* 61.] is made up out of the fore-branches of the four upper pairs of the great bone being united together. By reason whereof it passes the rest, yea and all the nerves of the whole body, not only in thickness, but in hardness also, as being made of the last, that issue out of the spine, or ridge. This enters into the hinder part of the thigh through the cavity, that is in the hinder part of the hip-bone. But presently it sends forth a notable propagation [*t.* 1. 62.] from its back-side, which stayes a pretty while under the first extending muscle of the thigh, or *Glutæus magnus*, the great buttock-muscle, and from thence is dispersed into the skin that covers the buttocks, and the back-side of the thigh to the middle of its length. Then it sends other propagations [*ta.* 1. 63.] on both sides, three for the most part to the heads of the third, fourth, and fifth muscles that extend the leg, and to the third bending one of the thigh. After this the trunk of the nerve descends among the muscles seated on the hinder part of the thigh, near to the bone, as far as half the length thereof, and distributes another branch [*t.* 1. 64.] to that fleshy lump of the fifth bending muscle of the leg, called *Biceps*, which grows to it on the inside, The fourth. The progresse of the trunk.

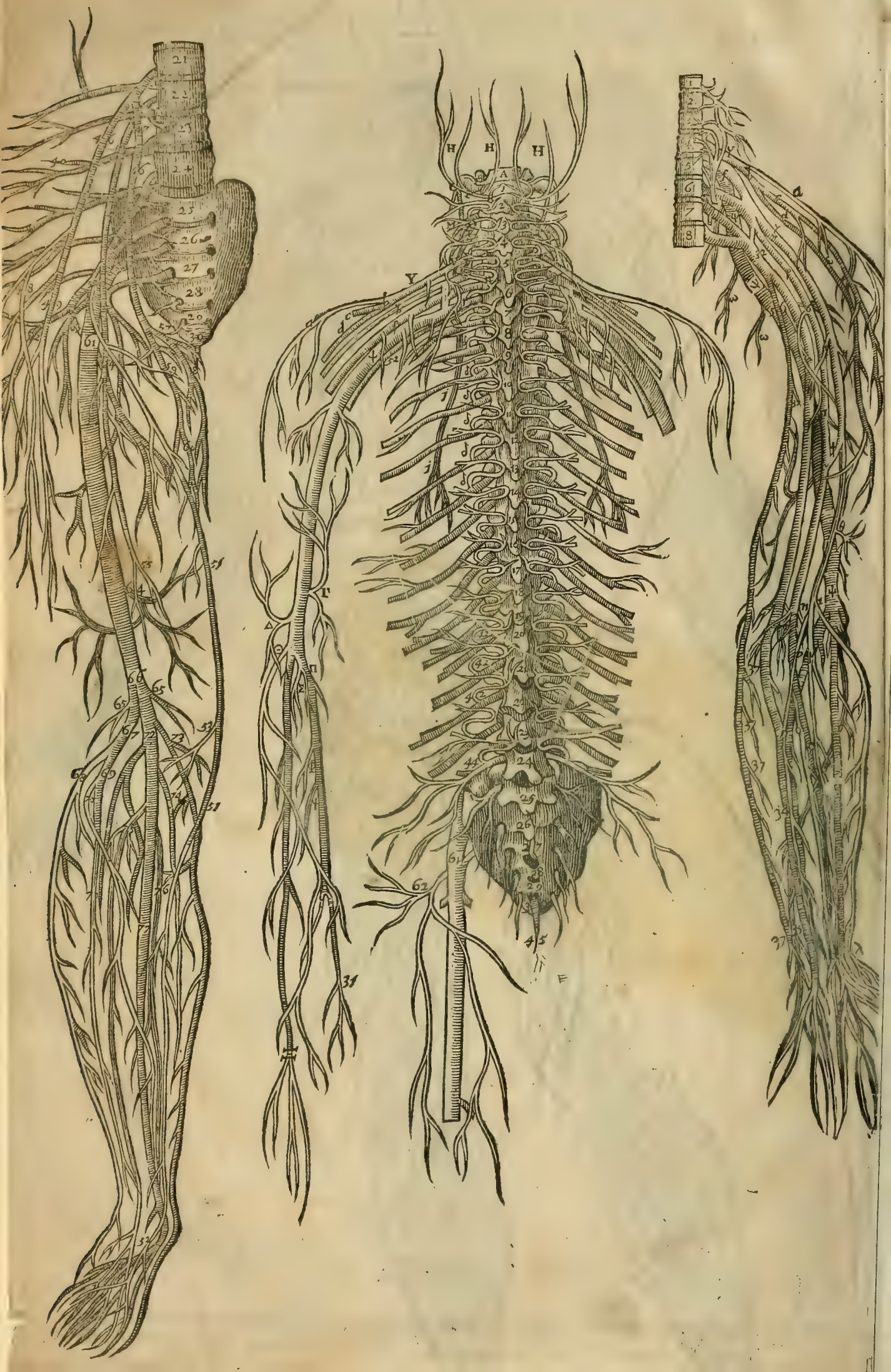
inſide, after it has gone beyond the middle of the thigh. From hence alſo other ſurcles proceed, which are diſtributed into the skin on the backſide of the thigh. But the trunk it ſelf proceeding farther on, at length attains to the knee betwixt the two heads of the bone of the thigh, and imparts a ſmall branch [*t.* 1. 65.] on each ſide into the firſt extending muſcle of the foot, and the ſole muſcle, called *plantaris*, and by and by is divided, [*t.* 1. 66.] into the inner cavity of the knee, or in the ham into two unequall branches, which are diſtributed alone through the leg and foot. For there is not any nerve which runs out through the leg, beſides theſe two branches of the fourth; if you except only that notable propagation, which being derived from the ſecond nerve, as we have ſaid, deſcends in company of the vein *ſaphena*, through the inner part of the *crus*. *The outer* branch [*t.* 1.67.] is the ſmaller, and goes toward that part where the upper *appendix* of the *fibula*, or leſſer bone of the leg is joined with the *tibia*, or greater bone thereof, ſcattering a propagation [*t.* 1.68.] in the way, which goes to the outer ancle under the skin, diſtributing in the mean time, many ſprigs to the skin. But the branch it ſelf [*ta.* 1. 69.] paſſes between the muſcles ſeated on the foreſide of the leg, and going through the long ligament of the *tibia* and *fibula*, or two bones of the leg, paſſes together with the tendons of the muſcles that extend the toes, under the tranſverſe ligament, and diſperſes little branches to the ſides of the upper part of the toes. *The inner* branch [*t.* 1. 72.] is carried down through the backſide of the *crus*, lurking betwixt the muſcle of the ſole of the foot, and the firſt of them, that move the foot obliquely, as alſo the long bending muſcles of the toes; and being joined afterward with the branch of the outer, which paſſes through the ligament, it goes to the ſole of the foot, and diſtributes propagations in both the ſides of the lower part of the toes.

Its diviſion.

FINIS.

AN





## An Explanation of the two Tables of the Nerves.

THe thirty pairs of the nerves of the marrow of the brain, whilſt it is carried through the ſpine or ridge, are expreſt in theſe two Tables the preſent & the following one. Wee have inſcribed common characters on both of them; though many alſo bee peculiar to one; after which we have preſently ſet the number of the Table. But the firſt ſhews the rack-bones of the ſpine and the nerves that iſſue from thence on the foreſide; the ſecond on the backſide.

nu. 1. t. 1. &c. — *as far as to* 7. *The ſeven rack-bones of the neck.*
8 *as far as* 19. *The twelve rack-bones of the cheſt.*
20 *as far as* 24. *The five rack-bones of the loins.*
25 *as far as* 30. *The ſix bones of the* os ſacrum. *Theſe ſame figures do ſtand for the pairs of the ſpinall marrow.*

A *ta.* 1. & 2. — *The ſeat of the ſpinall marrow, where it firſt enters into the rack-bones.*

1. 1. B 1. C 2. — The firſt pair *of the neck, whoſe* forwarder *propagations is* B; *the* hinder C.

2. 1. D. E 2. E 2. F 2. — The ſecond pair, *whoſe* fore-propagation *is* D, *its hinder* E, *from this two branches grow out; the* ſlender *one marked with the letter* E, the other thick *one with* F, *which is mixed with a branch of the third pair* M, *about* G. *But the courſe thereof to the ſkin of the crown, and backſide of the head is marked with the letter* H.

G

H

3. 1. I. 1. K. 1. M. 1. — The third pair *of the neck, whoſe* fore-branch I *is divided into four propagations.* The firſt K *is implanted into the muſcles, that bend the neck.* The ſecond L *is mixt with a twig of the fourth pair* Q. The third M *is mixt with the thicker propagation of the hinder branch of the ſecond pair* F. The fourth N *is inſerted into the muſcles that are joined to the tranſverſe proceſſes of the rack-bones.*

N.

O 2. — *The* hinder branch O.

4. 1. P. Q 1. R 1. S 1. T 2. — The fourth pair *of the neck, whoſe* fore-branch P *is cleft into three propagations.* The firſt Q *joins with the ſecond propagation of the third pair* L. The ſecond R *goes into the tranſverſe muſcle of the neck.* The third S. *The* hinder branch T.

5. 1. V 1. — The fifth pair *of the neck, whoſe fore-branch* V *iſſues out ſome ſurcles.* The firſt *goes to the muſcles that bend the neck, being to be ſeen in the firſt table between* V, *and the number* 6.

X 1. Y. — The ſecond X *making the greateſt part of the nerve of the midriffe.* The third Y *goes to the muſcle* Deltoides, *of which there is a propagation,* a, *which goes to the ſkin, that covers the muſcles* Deltoides, *and* Biceps.

a 1. b 1. c 1. — The fourth b, *at the neck of the ſhoulder-blade is cleft into two branches;* one *of which,* c, *enters into the muſcle* Deltoides, *at what part it growes out of the Collar-bone:* the other,

d 1. — d, *is implanted into the ſame, in the place where it grows out of the ſpine of the ſhoulder-blade.*

e 2. 6. 1. f 1. g 1. h 1. i, 1. l 2. 7. 1. m 1. 2. 8. 1. o 1. p 1. q 1. r 2. 9 1. t 1. u 1. x 2. 10, 11, 12 &c. to 19 inclusively 1. — The hinder branch, e.

The ſixth pair *of the neck, whoſe* fore-branch f, *when it has propagated that circle* g, *which with the fourth and fifth pair,* S *and* X, *makes the nerve of the midriffe, is joined with the two following,* h, *and thus it makes up the nerve of the midriffe* i, *ſo that this ariſes out of three ſurcles* S, X, *and* g. *The* hinder branch l.

The ſeventh pair *of the neck, whoſe* fore-branch *is* m, *its* hinder one n.

The firſt pair *of the cheſt, whoſe* fore-branch o, *is united,* p, *with the ſeventh pair of the neck, and ſecond of the cheſt, ſpreading a propagation* q, *through the upper ſide of the firſt rib. The* hinder branch r.

The ſecond pair *of the cheſt, whoſe* fore-branch *ſends forth a ſurcle* t, *running out through the firſt ſpace betwixt the ribs, and ſending ſurcles* u *to the muſcles of the cheſt.* *The* hinder branch x.

The paires of nerves from the ninth to the twentieth, *which have the ſame* ſeries *of propagations, and eſpecially to the diſtances of the ribs. The* fore-branches *of theſe (fig.* 1.) *are ſcattered into the muſcles ſeated on the fore part of the cheſt, and partly into their upper region,* as y, *partly into their lower* z, *which in women go alſo to the breaſts; and then they ſend other ſurcles into the heads of the oblique deſcending muſcles of the* abdomen *α, and into that which leads the arm from the breaſt β, another goes to the nipple of the breaſt γ.* The hinder branch δ.

y 1. z 1. α 1. β 1. γ 1. δ 1. ε 1. ζ 1. η η 1. † θ 1. ι 1. κ 1. λ 1. μ 1. ν 1. ο 1. π 1. ρ 1. σ 1. τ 1. υ 1. φ 1.

The firſt nerve that goes to the arm, *which is ſcattered into the ſkin of the outſide of the arm.*

The ſecond nerve that goes to the arm, *whoſe two firſt propagations* η η *goe to the two heads of the muſcle* Biceps: *then it joins with the third nerve by a ſurcle* †. *Thirdly, it carries a propagation to the longer muſcle that turns the palm of the hand downward* θ. *But about the bending of the cubit it is divided into two branches, an* outer ι, *and an* inner *one* κ. That ι *deſcending along the* radius *or wand, is inſerted at the outſide of the ſecond joint of the thumb* λ. This κ *is by and by ſubdivided into an* outer μ, *and an* inner *branch* ν. This ν *is again cleft in the region of the cubit into an* outer *branch* ο, *and an* inner *one* π.

The third nerve entring the arm ρ, *before it attains to the arm, ſcatters a ſprig betwixt the Pectoral muſcle, and* Deltoides σ. *By and by having entred the arm, it diſtributes another,* τ, *into the ſecond muſcle that bends the cubit.* *After that deſcending it receives a branch from the ſecond nerve* υ; *when it is paſt the bought of the arm, it is diſtributed into many*

*ſurcles*

.1. *surcles* φ, *at length about the palm of the*
χ 1. *hand it is divided into three branches* χ.
ψ 2. The fourth nerve entring the arm, *which is the greatest of all them that goe to the arm, is not marked with any letters in the second table, but in the third only, lest the second should be too much blurred with Letters. This sodainly after it has entred the arm,*
ω. *reaches out small sprigs* ω *into the muscles, that extend the cubit, then* another *into*
Γ. *the inner skin, upwards and downward* Γ, *and*
Δ. another *into the lower part* Δ, *and* another
Θ. Θ, *which goes as far as to the wrist. After this near to the bought of the arm it is*
Λ. *divided into two branches, an* outer *one* Λ, *and an* inner Π. That Λ *about the transverse li-*
Ξ. *gament is again divided in two* Ξ. *This* Π
Π. *reaching all along the cubit sends forth more*
Σ Φ. Ψ. *propagations, the* first Σ, *the* second Φ, *the*
Ω. third Ψ. *Then* another *in its progresse* Ω.
31. *The remainder ends in the wrist* 31.
32.1. The fifth that enters the *arm, which about the inner protuberation of the arm, is dis-*
33.34. *seminated like to the third. Its* first *surcle* 33,
35. *its* second 34, *its* third 35.
36.1. The sixth nerve of the arm, *which goes*
37. *under the skin imparting many sprigs to it* 37,
38. 37, 37. *The end of it is* 38.
0.21. The five pairs of the nerves of the
2,23, loins: *the first* 20, *the second* 21, *the third*
4. 1. 22, *the fourth* 23, *the fifth* 24. *A certain*
39.1. *branch arising from the first pair of the loins* 20, *and descending for the most part with the preparing artery to the testicle.*
40.1. *The course of the nerves through the muscles*
41. 1. *of the* Abdomen; *from which branches* 41 *goes to the muscle that leads the arm outward from the breast.*
42. 2. *The hinder branches of the nerves of the loins.*
5, 26, The six pairs of the nerves of the great
7, 28, bone. *Of these the first is* 25, *the second* 26,
9, 30.1. *the third* 27, *the fourth* 28, *the fifth* 29, *the sixth* 30.
43.1. *A Surcle reacht out from the* fore-branch
44. 2. *of the first nerve of the great bone to the inside of the hanch bone, and so to the muscles of the* abdomen, *that arise from that bone. Then a-*
45. 1 *nother spreading out from the* hinder-branch *to the muscles seated on the back of* os Ilium, *or the hanch-bone.*
*The termination of the spinall marrow passing on without a mate, and undivided.*
46. 1. The first nerve entring *the* crus. *This a-*
47. *rises where the third nerve of the loins meets*
48.1. *with the fourth* 47. *A branch of this* 48 *goes*
49. 1. *to the skin; but* 49 *it is entangled among the muscles, that are seated on the outside of the thigh.*

50.1. The second crurall nerve, *a notable pro-*
51.1. *pagation whereof* 51 *runs out in the same course with the vein* Saphena *to the end of*
52.1. *the foot, and there ends about* 52. *In the mean time it proffers another notable surcle*
53.1. 53 *to the foreside of the knee. But the remain-*
54.1. *der of the trunk* 54 *enters deep into the thigh,*
55.1. *and gives out a small branch* 55, *but without question the chief.*
56.1. The third crurall nerve, *whose propaga-*
57.1. *tion* 57 *goes to the muscles called* Obtura-
58.1. tores, *and another* 58 *to the skin. The re-*
59.1. *mainder* 59 *lies deep intangled in the muscles*
60.1. *whose chief propagation is* 60, *which is implanted into the second and third muscles, that bend the Leg.*
61.1. The fourth, *and that the thickest of all the nerves of the* crus, *whose* first *branch is*
62.1. 62, *which is inserted into the skin of the but-*
63.1. *tocks*; another 63 *is distributed into the heads of the muscles that arise from the* ap-
94.1. pendix *of the Hip: a* third 64 *is given to the fifth muscle, that bends the leg; and* o-
65.1. thers 65 *go into the outer calf-muscle; and that of the sole of the foot. But about the lower*
66.1. *heads of the thigh it is divided* 66 *into two branches, to wit, an* outer one, 67, *and* an inner 72.
67.1. The outer branch, *a propagation where-*
68.1. *of* 68 *is sent under the skin, that covers the outer part of the leg, aud the outside of the foot.*
69.1. *But the branch itself* 69 *goes to the conunexion of the lesser bone of the leg with the greater;*
70.1. *sending forth another surcle* 70 *to the forepart of the leg under the skin: the remainder of it*
71.1. 71 *reaches along the* fibula *or lesser bone of leg.*
72.1. The inner branch *a* propagation
73.1. *whereof,* 73, *goes through the inside of the leg toward the calf, and inside of the foot under the*
74.1. *skin: and* then another 74 *is scattered into the skin, especially that which covers the calf.*
75.75.1. Another *also* 75, 75 *goes into the fore-part of the leg through the ligament that joins the lesser bone of the leg to the greater, and afterward is spent on the upper side of the foot.* The last
76.1. *propagation* 76 *runs out betwixt the inner*
77.1. *and outer calf-muscles. The remainder of the trunk goes by the inner ankle to the lower part of the foot, distributing two surcles a peice to the lower part of all the toes.*

The second and third figures of the second Table. *These two figures do exhibit the nerves of the arm and leg in a larger form, then the first table does, so that all, which concerns those nerves, may be shew'n more accurately herein. But they have common characters, and the same explanation of the same serves for both.*

THE

THE *Readers ordinary charity is desired in behalfe of the* PRESSE. *Such faults, as are more considerable in these three* TREATISES, *and from which the Translation might possibly have suffered, are here set downe. As for those petty slips, which concerne the misplacing of* commas, *or the like, they will be as easily observed by the Reader, as they have been committed by the Printer, and are amended even before they are taken notice of.*

PAG. 1. line 3. for (*common*) read *cava* or, ibid.l.34. for κυσικὸς read κυσικὸς, ib.l.39. read *of the stomach*, p.3.l.15. put out (*we have said above that,*) ib. l. 24. for (*divided*) read *distributed*, ib.l.55. read *propagation*.l.56. for (*or the right*) read *and &c.* ib.l.61. for (*Mesenterick branch*) read *Mesentery*, p.4.l.17.for (*turn*) *burne*, ib.l.35. read *very well cured*, ib. l.41. read *acute*, ib. l.45. for (*and abundance*) read *an abundance*, p.5.l.7. read *Leucophlegmatia*, p.6.l.4. read *about the liver*, ib. l.17. for (*a circuit*) *the circuit*, ib.l.19. read *of the midriffe*, p.8.l.12. read *to the sinus*, ib.l.47. for *cheek* read *jaw*, ib.l.58.for (*circle*) *furcle*, p. 9. l. 1. read *Cutaneus*, ib.l.4. read *hyoides*, ib.l.11. read *furcles*, as also p.10.l.35. p.11. l.9. read *Radieus*, pag.12.line32. for (*snivell*) read *a mucous matter* ib.l. 67. for (*concocted*) *contorted*, pag. 16. line 12. for (*putting*) *pulling*, pag. 18.l.13. read *Radieus*, p. 23.l.12. for (*cups*) *chops*, p.25.l.36. for (*change*)read *judication*, p.26.l.42. for (*of the lower*) *the lower*, p.28.l.20. read *the same symptomes*, p.31.l.35. put out *wit*, ib.l.39. (*for to*) read *the*, p.32.~~l.21~~. read *the stomach-arterie*, ib.l.37. for (*o*) read *of*, p.36.l.49. read *the outer angle*, p.38.l.34. for *returned* read *turned*, ib.l.39. read *many furcles*, p.41.l.1. read *slenderer*, p.43. l.40. *Splenicus*, ib.l.46. read *the first of the loines*, ib.l.49. *going out*, p.47. l.10. *gone forth through*, p.48. l.6. *in the inner*, ib.l.22. *into both*, p.49.l.4. for *circle* read *furcle*, ib. l.35. *hinder branches*.

FINIS.

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